CrossTalk

February 2026 *Serving Our Community & Amateur Radio For 67 Years* *Issue 67 : 02*

2026 Club Officers

President :	**Jonathan Pearce WB2MNF**
Vice President :	**Ronald Block NR2B**
Treasurer :	**John O'Connell K2QA**
Recording Secretary :	**John Zaruba Jr K2ZA**
Corresponding Secretary :	**Michael Resnick N2WOQ**

Trustees - 4 Year Term

Sheldon Parker K2MEN	**(2023-2026)**
Len Rust W2LJR	**(2024-2027)**
Earl Moore KC2NCH	**(2025-2028)**
Greg Ciraula K3GS	**(2026-2029)**

Directors - 3 Year Term

Al Arrison KB2AYU	**(2024-2026)**	**Frank Romeo N3PUU**	**(2025-2027)**
Bill Price NJ2S	**(2024-2026)**	**Chris Prioli AD2CS**	**(2026-2028)**
Jeffrey Garth WB2ZBN	**(2025-2027)**	**James Wright N2GXJ**	**(2026-2028)**

General Membership Meeting
Wednesday, February 04, 2026 @ 1900 Hours
In-Person & ZOOM : 982 4039 1944, 091084

Tech Saturday Forum
Saturday, February 07, 2026 @ 0900 Hours
W2MMD Clubhouse

License Testing Session
Thursday, February 12, 2026 @ 1900 Hours
W2MMD Clubhouse

Board of Directors Meeting
Wednesday, February 18, 2026 @ 1900 Hours
W2MMD Clubhouse

Dinner @ The W2MMD Clubhouse
Wednesday, February 25, 2026

Tuesday AfterNoon 2M Net @ 1200 Hours

Thursday Night 2M Net @ 2000 Hours

Monday & Thursday Night 40M Net @ 1900 Hours
7.170 MHz (+/- 5 or 10 kHz)

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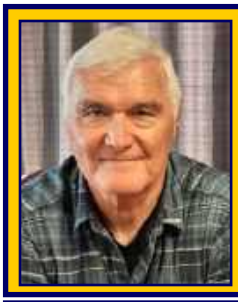
For more info on renewing your dues,
Call Jenny @ 867-5309
DUES ARE DUE!



President's Letter
Jon Pearce WB2MNF

February 2026

December was a busy month for most Club members with non-ham activities, and the cold weather limited additional work on the tower grounding system and cabling. Nonetheless, Club members got together for several significant events.

915 MHz Yagi Build Session

On Saturday, December 13, 2025, two groups of about a dozen members each came to the Clubhouse to build the 915 MHz 3D-printed Yagi antenna for unlicensed Meshtastic work. This design, created by **Chris Prioli AD2CS**, was based on an original article in the popular Hackaday online newsletter. That event was subsequently written up for the **Skunkworks (https://skunkworks.w2mmd.org)** website, and Chris provided the design files that now populate a page on the Club's GitHub site, allowing others to copy and implement it. Both of those resources were submitted to the editors of Hackaday, the original source of the design, and on December 31st, Hackaday published an article describing our project at : **https://hackaday.com/2025/12/31/bringing-a-yagi-antenna-to-915mhz-lora** - a great example of "what goes around comes around."

Member Appreciation Awards

Also in December, on the 10th, Club members and their significant others attended the Annual Club Holiday Dinner at the **Lamp Post Diner** in Clementon, NJ. During the dinner, two groups of awards were presented to Club members and others who have significantly contributed to Club activities over the last several months. **Chris Prioli AD2CS** and **Frank Romeo N3PUU** were personally presented with the **Milt Goldman Award** by **John Zaruba Jr K2ZA** for their outstanding contributions over several years, and an additional award was presented in absentia to **Jim Clark KA2OSV** for his many contributions over the years. The Club's Volunteer Appreciation Awards went to **Jonathan Romeo**, son of **Frank N3PUU** and **Kathy Romeo**, for his help on Field Day; along with **Nancy Smith** (my "significant other") for her assistance at the HamFest.

Additional Member Appreciation Awards were presented at the January 2026 General Membership Meeting to **Glen Guenther KE2BWO** and **Melissa Guenther KE2BWZ** for their help on Field Day and in many other projects, and to **Rich Subers W2RHS** for 3D printing of many Club building projects and years of participation as a volunteer examiner.

January Technical Sessions

January featured two successful technical sessions: the first an introduction to software-defined radios, and the second an overview and work session for the Meshtastic 915 MHz unlicensed radios. Both were marked by significant member participation and assistance with various aspects of those areas, reinforcing the ability of members to get help at the Clubhouse for many different types of projects.

President's Letter - Continued on page 4

President's Letter - Continued from page 3

Tech Saturday Forum - Understanding Digital Communication

For the next several months, we'll be digging into the underpinnings of how various digital radio modes transfer information - many of which can apparently-miraculously decode signals below the noise level. Others are designed for specific purposes, such as EME communication or meteor scatter, and my curiosity was piqued as to how **Joe Taylor K1JT** and his team of geniuses made these different applications work so well. So I started an AI -assisted research quest, digging into the details of each mode and continuing to ask for clarifications until I understood enough of the details to put together a presentation. That research forms the basis for this set of Tech Saturday Forum sessions, which I hope will be interesting to other Club members. This isn't a "how to" approach - it's a "how does it work" group of programs. **See the Tech Saturday Forum on Page 9 for details.**

Revisiting DMR Radio

After some active DMR sessions last year we let the DMR topic languish while the Club's Glassboro DMR repeater was getting configured. It's been operational for several months and a few people have come to the Clubhouse recently asking for assistance in getting set up on their home hotspots and on that repeater. To revive interest in DMR and bring everyone up to date we'll set up a Saturday date on February (probably the 21st) at the Clubhouse for a refresher and update work session to get everyone operational on DMR again. Look for an announcement later confirming this session.

STEM Project Update

The STEM program at **Woodruff Middle School** continues with significant interest from the kids in soldering various types of projects. Less advanced solderers have built small kits that light LEDs based on sound levels, while some of the more advanced kids have constructed a coil gun that shoots metal pellets a short distance (although those kids are clamoring for more capacitors and higher voltages we need to keep the power output of the device below the ***"firearm"*** level…). **Angela Metzger KE2DRJ** has led another group of kids in building small projects using circuit boards and individual electronic components.

The major upgrade to the STEM program has been the installation of the rooftop antenna support that holds the end of the end-fed HF antenna, the VHF and UHF eggbeater antennas for satellite work, the Meshtastic solar node, and the Acu-Rite weather station outdoor unit, all of which was designed by **Mike Thompson KG4JYA**. With the antennas connected to the FT-991A radio, we hope to get the students interested in ham radio and potentially pursue a licensing program for interested kids. **See Page 36 for details**.

Skunkworks and GitHub Websites Updated

The GCARC ***"Skunkworks"*** website was created several years ago to provide a repository of information about various technical projects undertaken by Club members. The ***"Technical Activities and Resources"*** section has recently been updated to include information about current activities such as SDR, Meshtastic, DMR, and several types of HTs that are popular with members. The ***"Clubhouse"*** section has been updated to include information about the satellite station, the grounding project, EME operation, and other Clubhouse-related activities. Check it out at **skunkworks.w2mmd.org**.

In addition, the Club's GitHub site has been updated with information about the 915 MHz Yagi, the GOES 19 weather station reception, the Pi-based satellite rotator controller, and several other projects - it's at : **https://github.com/w2mmdskunkworks**.

President's Letter - Continued on page 5

President's Letter - Continued from page 4

Getting Help at the Clubhouse

One of the most rewarding and energizing moments of January happened during one of our Saturday sessions at the Clubhouse. As I looked up from the table I saw four of our most experienced Club members gathered around the table, patiently and enthusiastically working side-by-side with newer members - answering questions, trouble-shooting setups, demonstrating techniques, and sharing their deep knowledge in a way that made everything click. It was exactly the kind of collaborative, hands-on help that makes our Clubhouse such a special place.

At every General Membership Meeting, I encourage anyone with a question - big or small - to come out to the Clubhouse on Saturdays. What I witnessed in January was proof of why that invitation is so important : experienced operators genuinely love sharing what they know, and newer members walk away not just with answers, but with confidence, new skills, and a stronger connection to the Club. If you've got a project, a radio that's acting up, or just want to learn something new, grab your coffee and head to the Clubhouse on Saturday morning - you'll find a warm welcome and a room full of hams who are thrilled to help you get on the air or take the next step in the hobby.

Get ready for an interesting Spring with many ham radio activities! Hope to see you at the meetings and the Clubhouse.

73 de Jon WB2MNF

GCARC Class Picture : January 7, 2026
Submitted to the ARRL for their Club Picture Contest
Hopefully the picture will be in an issue of QST magazine this year

Welcome New Club Members :

- **Hadyn Cotton KC3AMM, a Technician Class from Swedesboro, NJ.**
- **Daniel Devlin KC2GYU, a General Class from Seaville, NJ.**
- **Joseph Fisher KC2TN, an Amateur Extra Class from Atco, NJ.**
- **Anthony Vece W2AJV (Returning Member 1994), a General Class from Atco, NJ.**

We are glad to have you as a member of the Club and hope to see you regularly at Club meetings, events, and activities. Hope to see you at :

- **The February 4th General Membership Meeting, either in-person or on ZOOM**
- **The February 7th Tech Saturday Forum @ the W2MMD Clubhouse**
- **The Board of Directors Meeting on February 18th**
- **The Dinner @ The W2MMD Clubhouse on February 25th**

We also hope to "SEE" you on the "AIR" on the following nets :

- **Sunday Night Skywarn 2 Meter Net @ 1930 Hours**
- **Sunday Night ARES 2 Meter Net @ 2000 Hours**
- **Tuesday AfterNoon 2 Meter Net @ 1200 Hours**
- **Monday & Thursday Night 40 Meter Nets on 7.170 MHz (+/- 5 or 10 kHz) @ 1900 Hours**
- **Thursday Night Rag Chew 2 Meter Net @ 2000 Hours**

All 2 Meter Nets are on our 147.180 MHz (PL 131.8) repeater or on EchoLink W2MMD-R.

So you find our website confusing, can't find anything

I have created a page called "Quick Links"

On this page you will find "Buttons" to some the most popular pages
I will add more as time goes on, but I hope this helps your journey navigating through your Club Website!
https://gloucestercountyarc.weebly.com/quick-links.html

You Can Pay Your Membership Dues Using Cash, Check, Credit Card :

- **Pay your dues using our Pay Dues Here webpage**
- **Bring your money to a General Membership Meeting**
- **Bring your money to a Tech Saturday Forum**
- **Bring your money to any Saturday @ the W2MMD Clubhouse**
- **Send your check in to our PO Box 370**

Gloucester County Amateur Radio Club
PO Box 370, Pitman, NJ 08071

The membership dues are :

- **$30.00 - Full Membership (Plus an Optional Donation)**
- **$15.00 - Family Membership**
- **$25.00 - Associate Membership (Plus an Optional Donation)**

March 31, 2026 is the deadline to renew your membership dues

General Membership Meeting

Wednesday, February 04, 2026 @ 1900 Hours

Pfeiffer Community Center

Simulcast Live Via ZOOM : Meeting ID : 982 4039 1944; Passcode : 091084
Join ZOOM Meeting Link : https://bit.ly/4s67geS

Go to : https://gloucestercountyarc.weebly.com/2026-content--activities--resources.html to download the ZOOM log-on instructions PDF

Antenna Facts, Myths, And Tips

By Hal Kennedy N4GG

This month, **Hal Kennedy N4GG**, will join us over Zoom for a practical, hands-on session that cuts through the jargon and gives you clear, usable guidance for better antennas and a more reliable station. Whether you're a newcomer stringing your first wire or an experienced builder tuning a beam, this meeting will separate useful rules from persistent myths and leave you with tips that you can apply to your station. Here is what Hal is planning to cover :

Antenna Gain

- **Where it comes from :** Hal will explain the physical meaning of gain, how antenna shape and size concentrate energy, and why higher gain isn't always "better" for every job.
- **Effects of the Earth on practical antennas :** Learn how ground conductivity, antenna height above ground, and nearby objects change real-world radiation patterns and effective gain.

SWR

- **What it is :** A plain-language definition of standing wave ratio and what the numbers actually tell you about your power transfer.
- **When it is important :** He'll discuss situations where SWR directly affects performance or safety.
- **When it is NOT important :** Common cases where obsessing over a perfect SWR wastes time and resources.
- **Why is your measurement usually wrong :** Measurement pitfalls, instrument limitations, and how to interpret SWR readings sensibly.

Transmission Line Loss

- **Everything matters :** Hal will cover how cable type, length, characteristic impedance, build quality, and operating frequency all combine to determine loss.
- **Where to put the antenna tuner :** Practical guidance on tuner placement to minimize loss and maximize radiated power.

February 2026 General Membership Meeting - Continued on page 8

February 2026 General Membership Meeting - Continued from page 7

Antenna Tips

- **Wire and support lines :** Best practices for routing, insulation, and avoiding RF in feed lines.
- **Tie-downs :** Simple, durable anchoring methods that protect your installation in wind and ice.
- **Longevity and mechanical load :** How to design for fatigue, reduce stress points, and plan maintenance so your antenna lasts.

This should be a highly informative and interesting program, so bring your questions and concerns for Hal to answer. See you there.

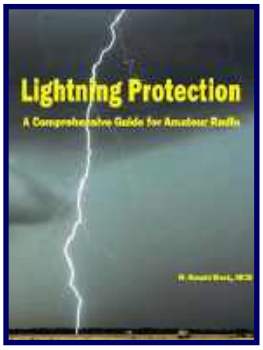
New Members Support Group & Discord Channel

- **Organized By Jim Beury KE2DRN**
- **Objective : To focus Club resources on the needs of newly licensed members**
- **Supported by "new_members" Discord Channel**

Additional Support :

- **Saturday Morning @ The W2MMD Clubhouse**
- **GCARC@MAILMAN.QTH.NET Club E-mail Reflector**
- **E-Mail President @ w2mmd.org**

Lightning Protection :
A Comprehensive Guide for Amateur Radio
Author : W. Ronald Block, NR2B
Contact : ron@wrblock.com
Website : www.wrblock.com



GCARC TechNet ZOOM Forum

GCARC TechNet ZOOM Forum will be coming back in March 2026 with a series of training sessions on WSJT-X and related applications

Date &Forum Topic : See e-mail and website for more information

Go to : https://gloucestercountyarc.weebly.com/gcarc-technet.html
for TechNet Information Resources and ZOOM Instructions

Meeting ID : 933 9943 3123 ; Passcode : 800835
Join ZOOM Meeting Link : https://bit.ly/3K8bWwj

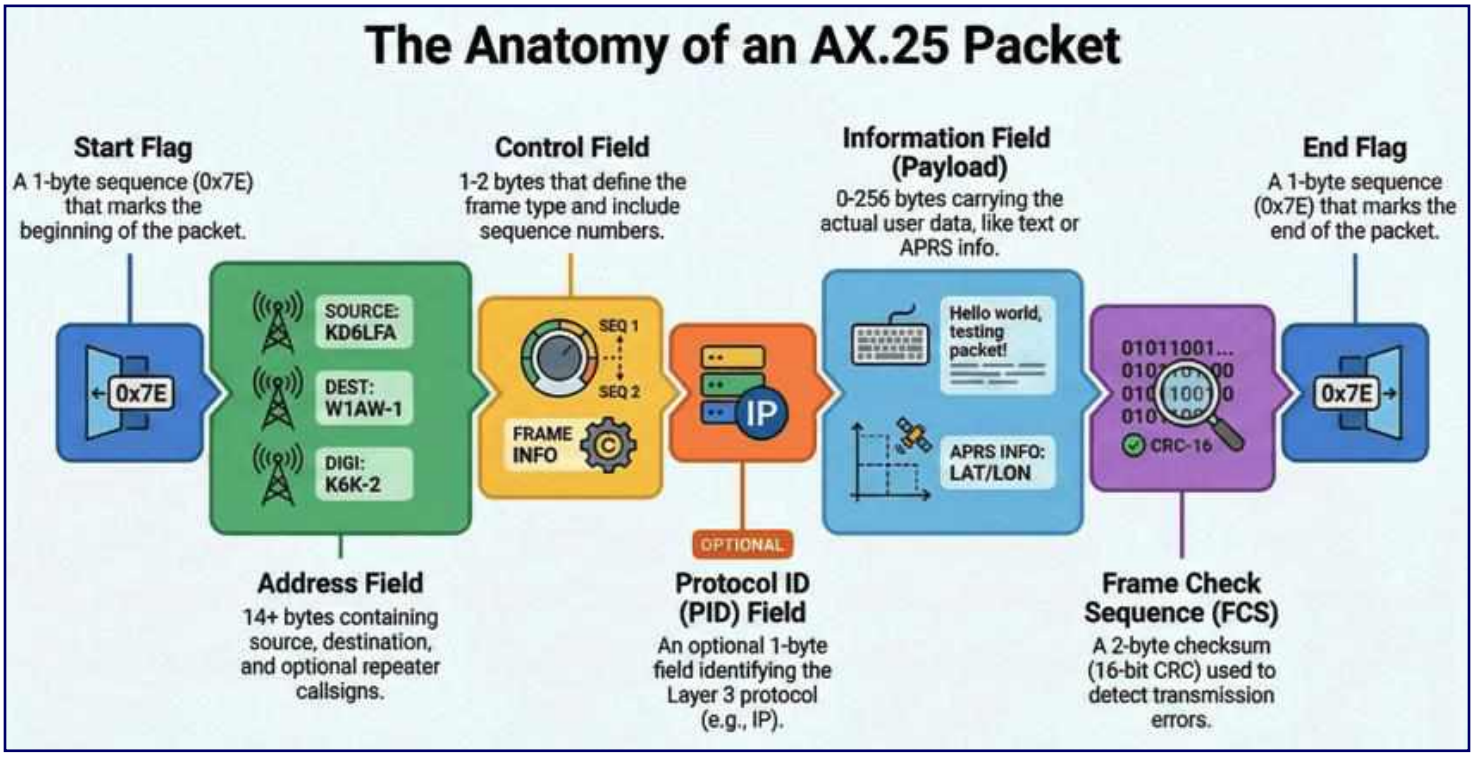
Tech Saturday Forum

February 07, 2026 @ 0900 Hours

W2MMD Clubhouse

Forum Topic : Digital Radio Deep Dive

February Tech Saturday : Launching Our Digital Communications Series Starting With Packet Radio


The Anatomy of an AX.25 Packet
Start Flag
A 1-byte sequence (0x7E) that marks the beginning of the packet.
Control Field
1-2 bytes that define the frame type and include sequence numbers.
Information Field (Payload)
0-256 bytes carrying the actual user data, like text or APRS info.
End Flag
A 1-byte sequence (0x7E) that marks the end of the packet.
0x7E
SOURCE: KD6LFA
DEST: W1AW-1
DIGI: K6K-2
SEQ 1
SEQ 2
FRAME INFO
IP
Hello world, testing packet!
APRS INFO: LAT/LON
01011001...
100
CRC-16
0x7E
OPTIONAL
Address Field
14+ bytes containing source, destination, and optional repeater callsigns.
Protocol ID (PID) Field
An optional 1-byte field identifying the Layer 3 protocol (e.g., IP).
Frame Check Sequence (FCS)
A 2-byte checksum (16-bit CRC) used to detect transmission errors.

As we head deeper into 2026 we're kicking off a multi-month series of Tech Saturday Forum sessions dedicated to the technical underpinnings of the digital modes are used for multiple functions in ham radio. We'll dive into the nuts and bolts of various digital communications methods, starting with packet radio, then moving on to the WSJT family (FT8, FT4, JT65, and more), and possibly touching on the FLDigi suite of modes as well. These sessions will go beyond surface-level operation to explore the protocols, signal structures, timing, and configuration details that make these modes work so effectively - geared to those of us who enjoy understanding the “why” behind the contacts.

We begin this February with a deep dive into ham packet radio (AX.25), the granddaddy of amateur digital modes that still powers APRS position reporting, Winlink email, and countless legacy applications. We'll cover how packets are actually formed and transmitted, the critical role of acknowledgments and retries for reliable delivery, optimal radio settings to minimize collisions and maximize throughput, and practical demonstrations of sending messages using computer interfaces as well as modern HTs with built-in KISS TNCs and Bluetooth capabilities. Much of the material draws from our Club's detailed resource page at **https://wp.w2mmd.org/wp/packet-radio-ax-25-in-amateur-digital-communications**, for those who’d like a preview of the topics to be discussed.

Tech Saturday Forum - Continued on page 10

Tech Saturday Forum - Continued from page 9

The **March 7, 2026 Tech Saturday Forum** session will cover the modes included in the WSJT suite of programs. In comparison with AX-25 packet the WSJT programs are engineered for weak-signal work and are most commonly used on HF bands (though many modes also excel on VHF/UHF for specialized propagation). Developed by **Joe Taylor K1JT**, and his genius team, they includes modes like FT8 for HF QSOs, Q65 for EME, MS144 for meteor scatter and WSPR for ultra-low-power propagation testing. These modes rely on structured, timed transmissions, heavy redundancy through layered encoding, and advanced decoding that can recover messages from signals buried far below the noise floor. The result is reliable global contacts on HF, moonbounce on VHF/UHF, or meteor-scatter pings - use cases where packet would simply fail because the signals are too weak or the path too challenging. The March 7th Tech Saturday session will focus primarily on the protocol itself - the modulation techniques, encoding schemes, error correction, and redundancy built into each mode - rather than step-by-step operating instructions.

And if members are still interested after these sessions we'll look at covering some of the FL-Digi modes like **PSK31**, **Olivia**, and **Contestia** in April.

Join us at the W2MMD Clubhouse on Saturday, February 7th at 9:00 AM for about an hour of technical discussion, Q&A and demos. Tech Saturdays are always a great opportunity for Club members to get together and share knowledge and experience.

73 de Jon WB2MNF

Fox Hunt 35 AAR (After Action report)

By Marc Federici WM2Y

Fox Hunt 35 took place on **Sunday, January 11, 2026**. The weather was pleasant, and depending on how you look at it - there was no snow to complicate this winter's hidden transmitter hunt. We had six hunters participating :

- **Al Arrison KB2AYU**
- **Karl Frank W2KBF**
- **Jim Wright N2GXJ**
- **Doug Dersch KD2VQA**
- **Dean Marzocca N2TNN**
- **Vinnie Sallustio N4NYY**

This hunt featured a Le Mans - style (common) start, with everyone meeting in the Clubhouse parking lot. Hunters were required to stay within a three mile radius of the Gloucester County 4-H Fairgrounds for the duration of the event.

Doug KD2VQA was the first to arrive at **Ella Harris Recreation Park**, armed with nothing more than an HT. He was soon followed by **Al KB2AYU**, **Karl W2KBF**, **Dean N2TNN**, and **Vinnie N4NYY**.

Ella Harris Recreation Park is a Harrison Township community park just about a mile down the street from the W2MMD Clubhouse in Mullica Hill, NJ.

Al KB2AYU ultimately became the first to locate the fox, which was hidden in a holly tree behind the baseball fields. He found it using only the 3rd harmonic on 439.695 MHz.

Karl W2KBF earned a well deserved second place, impressing even himself after taming those pesky common mode currents on his coax feedline with a few ferrite beads.

Jim N2GXJ secured third place while also putting his homebrew TDOA setup to the test.

Doug KD2VQA and **Dean N2TNN** both managed to track down the transmitter as well, with a bit of coaching from Al and Jim.

Vinnie N4NYY rounded out the group after spending some time chasing a phantom harmonic, but he did manage to log his 10,000 steps for the day.

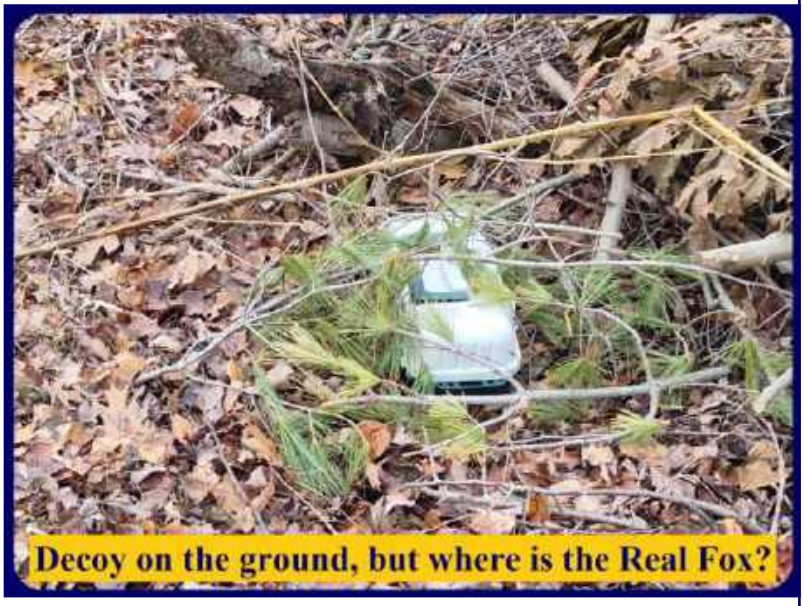
After the hunt, a few of us headed over to Marino's to swap stories and brainstorm ways to make the next event even more challenging.

Since Al was the first to find the fox, he'll be hiding the transmitter for the next hunt, likely sometime in early spring. It'll be exciting to see what he comes up with.

Fox Hunt 35 - Continued on page 12

Fox Hunt 35 - Continued from page 11

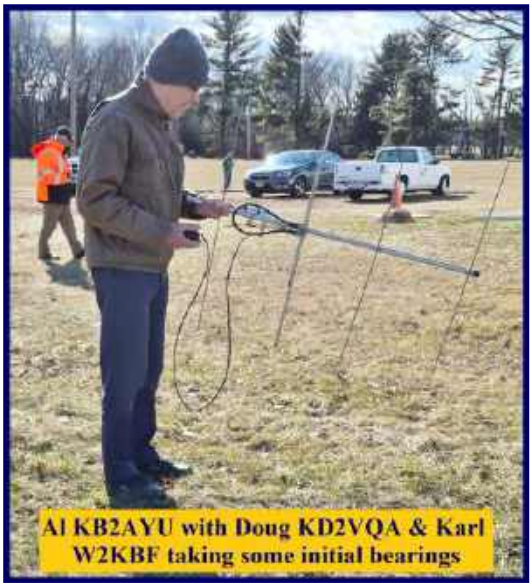
The Real Fox hidden in a holly tree



Decoy on the ground, but where is the Real Fox?

Fox Hunt 35 The Hunters : Doug Dersch KD2VQA, Al Arrison KB2AYU, Dean Marzocca N2TNN, Karl Frank W2KBF, Vinnie Sallustio N4NYY

Karl W2KBF
Second place winner



Al KB2AYU with Doug KD2VQA & Karl W2KBF taking some initial bearings

Vinnie Sallustio N4NYY
getting his bearings

Dean N2TNN, Doug KD2VQA, Jim N2GNJ (3rd place)

GCARC Monthly VE Exam Testing Summary - January 2026

By Chris Prioli AD2CS

The January 2026 GCARC VE session was held on Thursday, 8 January. As the first session of the new year, we wiped the activity summary slate clean and started over again. As a result, we have only one candidate listed in the year-to-date summary table. However, I also took advantage of the new year to start a new type of activity summary that will run alongside the customary month-by-month grid in each monthly issue CrossTalk. The newly added grid can be seen below. The January VE session was held at the W2MMD Clubhouse and was administered by Volunteer Examiners as listed below, with **Chris Prioli AD2CS** serving as Team Liaison for the event :

- **Joe Gadoury N2JJG**
- **Gary Reed N2QEE**
- **Rich Subers W2RHS**

The lone candidate, who showed up as a walk-in, tested for his Technician (Element 2) and General (Element 3) license levels. **Ryan Albanese KE2HLN** of Cherry Hill, NJ is the newly-minted Technician who tested with us in this session; he was unsuccessful in his attempt at the Element 3 exam.

The VE Team proctored the exam session using completely electronic methodologies. This means that the candidates completed the exams online, and that all grading and submissions were done online as well.

The next regularly-scheduled VE session will be held on Thursday, 12 February 2026, at 1900 Hours at the W2MMD Clubhouse, as is our usual plan. The VE team will be using the ExamTools system to its fullest capability, within our current technological means.

It is important that all test candidates going forward will be advised, whenever possible, to pre-register and pre-pay for the exam online. Specifics of that process are explained at : **https://veteam.w2mmd.org**

GCARC VE Team Historical Summary

	Technician Class	General Class	Amateur Extra	Total
2016	18	8	6	32
2017	22	19	4	45
2018	29	23	5	57
2019	16	10	8	34
2020 *	8	4	1	13
2021 *	8	5	1	14
2022	22	15	18	55
2023	20	18	10	48
2024	22	12	6	40
2025	24	14	6	44
2026	1	0	0	1
2027				
2028				
2029				
2030				
Totals	190	128	65	383
	* Pandemic	Period		

Membership Badges Ready For Pick-Up

They can be picked up at the W2MMD Clubhouse or at the monthly General Membership Meetings

Dave Danichkin KD2UXC
Jon Davidson KE2DYD
Jim Foster W3JNF
Gary Hewitt N2WHV *
Frank Parsinitz KD2GSY
Jack Snyder AI2D
Marian Yanka KE2GOL

The Clubhouse is open and accessible every Saturday from 0700 until 1600 Hours, and on the third and fourth Wednesday evening of each month as well as the second Thursday evening of each month from about 1700 until 2000 Hours.

The badges can also be picked up at any General Membership Meeting. They will be displayed at the Hospitality Table

If there is an asterisk (*) after your call sign above, your badge is a replacement and has a cost of $5.00 payable to the Club at the time of pickup of the badge.

HamCation 2026
February 13 - 15, 2026
Central Florida Fairgrounds and Expo Park
Orlando, FL
www.hamcation.com

There is a new website for the Gloucester County Amateur Radio Club Volunteer Examiner Team. Everything you need to know about getting your ham license or upgrading your license can be found on this website. Pass It Around!

https://veteam.w2mmd.org

DAs & DITs

>> A Big Get Well to **Ellen Tagliaferri,** XYL of **Mario Tagliaferri W3CGS**. Ellen is rehabbing after hip surgery.

>> Get well to **John Murrow KD2NHK**, recovering from eye surgery. He is temporarily stationed on the 146.895 repeater.

>> Our own **Cory Sickles WA3UVV** is a guest on the **QSO Today Amateur Radio Podcast With Eric Guth 4Z1UG**. Go to : **https://www.qsotoday.com/podcasts/wa3uvv**

>> **Darrell Neron AB2E**, reports, Here's where I'll be operating from for 2026 DXpeditions. Note that I have added RTTY as a mode outside of the contests. If anyone needs VP9 or FM on any band/mode, feel free to email me for an attempted schedule (outside of the contest period for each of course).

- **VP9I Feb-17-24**, AB2E and K3TEJ will be active in the ARRL DX CW contest, M2 LP as VP9I. Before/after the contest, active as AB2E/VP9 and K3TEJ/VP9 on CW, RTTY, and FT8. QSL to home call for both. VP9I QSL only via WW3S. Outside the contest, focus on WARC & low bands.
- **VP9I Mar-4-10**, AB2E will be active in the ARRL DX SSB contest, SO LP as VP9I. Before/after the contest, active as AB2E/VP9 on CW, RTTY, and FT8. QSL to home call. VP9I QSL only via WW3S. Outside the contest, focus on WARC & low bands.
- **TO3E May-26-Jun2**, AB2E returns for the WPX CW contest, SOHP as TO3E. Before/after the contest, active as TO3E on CW, RTTY, and FT8. QSL to home call. Outside the contest, focus on WARC & low bands.

>> **John Zaruba Jr K2ZA (Club Merch Guy!),** reports, For anyone interested in Club merch that's embroidered, **F&W Graphix** in Monroeville has the Club logo in a digitized form. Embroidery is better for things like jackets, hats, and fleece items. F&W doesn't seem to have an accessible website but they are very responsive via phone, (856)358-3706. They use the following companies for their blank items, so you can get an idea of what is possible :

- **https://www.ssactivewear.com**
- **https://www.sanmar.com**

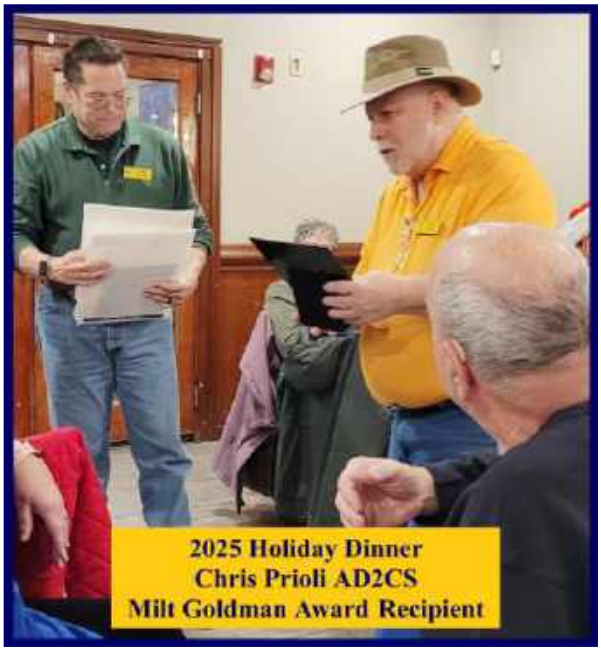
A *Club* that goes *above* and *beyond* for their communities and for Amateur Radio, is what defines a *Special Service Club (SSC).*

They are the leaders in their Amateur Radio communities who provide active training classes, publicity programs, and actively pursue technical projects and operating activities.

GCARC has been an ARRL Affiliated Club since February 4, 1960 and an SSC since April 2010.

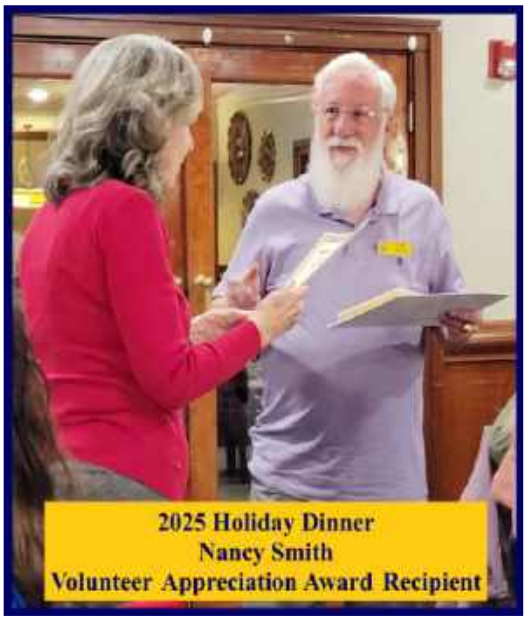
2025 GCARC Holiday Dinner Highlights

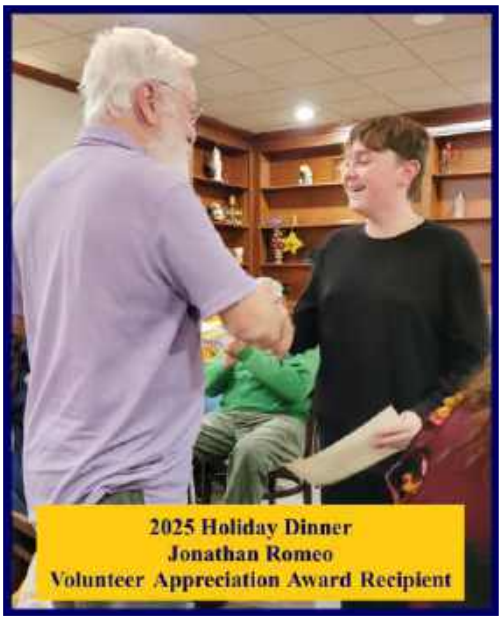
2025 Holiday Dinner
Jim Clark Sr KA2OSV
Milt Goldman Award
Recipient


2025 Holiday Dinner
Chris Prioli AD2CS
Milt Goldman Award Recipient

2025 Holiday Dinner
Karl Frank W2KBF
Guitar Extraordinaire

2025 Holiday Dinner
Frank Romeo N3PUU
Milt Goldman Award Recipient


2025 Holiday Dinner
Nancy Smith
Volunteer Appreciation Award Recipient


2025 Holiday Dinner
Jonathan Romeo
Volunteer Appreciation Award Recipient

2025 Holiday Dinner

Regional (Atlantic & Hudson Divisions) Hamfests & Events

February 07, 2026 : Keuka Lake Amateur Radio Association, Almond Groundhog Day Hamfest, Almond NY Municipal Building, 1 Marvin Lane, Almond, NY. **www.klara.us**

February 22, 2026 : Wireless Association of South Hills, WASHFEST, South Park Home Economics Building, 3735 Buffalo Drive, South Park Township, PA. **www.n3sh.org**

February 22, 2026 : Long Island Mobile Amateur Radio Club, Long Island Electronics & Hamfair, Levitan Hall, 201 Levittown Parkway, Hicksville, NY. **www.limarc.org**

February 28, 2026 : New Providence Amateur Radio Club, NPARC Auction & Flea Market, Salt Brook Elementary School Cafeteria, 40 Maple Street, New Providence, NJ. **www.nparc.org**

NEW JERSEY EMERGENCY COMMUNICATIONS TEAM
NATIONAL INVENTORS' DAY 2026
N2I
AMERICA 250th ANNIVERSARY
5th Year
AMATEUR RADIO SPECIAL EVENT STATION
February 7, 2026 SAT
1000 to 1600 Eastern
Thomas Edison Center
Edison, New Jersey
Planned Bands:
2M FM
10M, 20M, 40M SSB/CW
Talk-In:
Portable Repeater
443.450 +5MHz PL 100.0
Special event station site is the location where Thomas Edison and his team invented the incandescent light bulb, the phonograph, and the carbon microphone for Bell's Telephone
Parks On The Air
US-1615
NJECT.US

Club Merchandise from the K2ZA Workshop
Contact John Zaruba Jr K2ZA at k2za@icloud.com
Go To : https://gloucestercountyarc.weebly.com/club-merchandise.html

"Dinner @ The W2MMD Clubhouse"
Wednesday, February 25, 2026 @ 1800 Hours

Current Website Updates : Go to this page to find out the latest changes & updates on our W2MMD Website
https://gloucestercountyarc.weebly.com/current-website-updates.html

The Education Connection

By Chris Prioli AD2CS - chris@ad2cs.com
www.ad2cs.com

February 2026

Great news!

For those of you who have been anxiously awaiting the opportunity to register for a seat in one of the Spring 2026 Ham Exam Preparation Class groups, the registration page is now live and available for your use!

We have created a page on the VE Team website that deals with the Ham Exam Preparation Classes - to visit the page and to register for a class, point your browser to **https://veteam.w2mmd.org/wpve/index.php/gcarc-ham-license-exam-preparation-class-information.**

That page provides information about how the classes are run, and it also has a direct link to the registration form… which also provides the reader with the various payment method possibilities.

GCARC Ham Exam Preparation Class Session X Class Meeting Schedule

Element 2		Element 3		Element 4
4/6/2026		4/7/2026		4/10/2026
4/13/2026		4/14/2026		4/17/2026
4/20/2026		4/21/2026		4/24/2026
4/27/2026		4/28/2026		5/1/2026
5/4/2026		5/5/2026		5/8/2026
5/11/2026		5/12/2026		5/15/2026
5/18/2026		5/19/2026		5/22/2026
(MEM DAY)		5/26/2026		5/29/2026
6/1/2026		6/2/2026		6/5/2026
6/8/2026		6/9/2026		6/12/2026
6/15/2026		6/16/2026		6/19/2026
6/22/2026		6/23/2026		6/26/2026

As a reminder, the Spring 2026 sessions will run a total of twelve weeks of class meetings (eleven for the Element 2 group), with the FCC exams being administered in a single joint session on Monday, 29 June 2026, as shown in Table 1. As I mentioned last month, this will be the first time that we are holding one single exam session for the entire body of students. With the exams now being administered via computer instead of via pen and paper, much less time is needed for the overall process. The exam candidates will get their exam results immediately, at the click of a mouse. Please note that the scheduled exam date is the Monday evening ***after completion of the twelve weeks of scheduled class meetings***. In this manner, all twelve weeks can be dedicated to the educational aspect of the program and preparation for the exam. We will not have to take any class meeting time out for the exam - it will have its own scheduled date.

The registration fee has remained at its low level of $35.00, where it has been for the past two years. For that low fee, the student gets :

- The full benefit of the classroom group training experience
- Exposure to scheduled practice exams
- A complete set of full-color printed proprietary GCARC educational handouts - graphs, tables, visual graphics, equations, and more
- A flash drive loaded with useful information including videos, glossaries, the complete text of 47 CFR §97, the applicable question pool, PDF files of all of the handouts, and more
- A personal copy of the ***Craig Buck Easy Way*** reference manual appropriate for the Element in which the student is enrolled

The Education Connection - Continued on page 19

The Education Connection - Continued from page 18

- Access to the wealth of knowledge of the instructional staff, with personalized attention whenever a student has questions that need to be answered

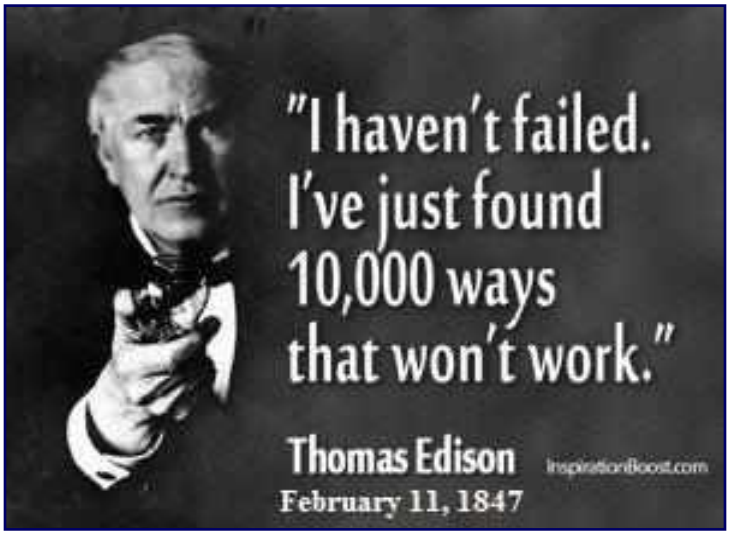
I am looking forward to having plenty of registrants for the three class levels being taught, Our classes are very successful, with well over 95% of the students passing their FCC exam on the first attempt. If you have been waiting for the right opportunity to come along, here it is!

Oh - another point - it was brought to my attention that the last scheduled evening of the Amateur Extra class is also the evening before Field Day 2026. While I knew that when I laid out the class calendar, I also did not think that it was much of a problem. However, I will do all that I can to complete the Amateur Extra class content by the end of the eleventh meeting, so that there is no conflict with Field Day setup. The exam date remains as originally planned, which is on Monday, 29 June 2026.

Our classes are now advertised on the ARRL website. Go to (**https://www.arrl.org/find-an-amateur-radio-license-class**) Find an Amateur Radio License Class in Your Area to locate the listings - search for ZIP code ***08062*** and the listings will appear. Feel free to pass that information on to anyone who may be looking for a class to attend. Our classes are open to all interested individuals - not just to our Club members

That's all, folks! See you next month…

Tuesday, February 17, 2026



Full Snow Moon - Sunday, February 1, 2026 @ 1710 Hours

In the 1760s, Captain Jonathan Carver, who had visited the Naudowessie (Dakota) and others, wrote that the name used for this period was the Snow Moon, "because more snow commonly falls during this month than any other in the winter."

The Cree called this the Bald Eagle Moon or Eagle Moon. Bear Moon (Ojibwe) and Black Bear Moon (Tlingit) refer to the time when bear cubs are born. The Dakota called this the Raccoon Moon, and certain Algonquin peoples named it the Groundhog Moon. The Haida named it Goose Moon.

The Cherokee names of "Month of the Bony Moon" and "Hungry Moon" give evidence to the fact that food was hard to come by at this time.

Old Farmer's Almanac - www.almanac.com

ADIF Logs Wanted When Operating As W2MMD @ The Clubhouse

By Jim Wright N2GXJ - Contact me via e-mail on Club Roster List

It is a common courtesy in ham radio to be able to QSL 2-way contacts made with other hams. We're pretty good about doing this for our field day contacts made each year, but are falling behind in this for contacts we make from the Clubhouse as W2MMD.

So here is the ask :

If you operate from the Clubhouse as W2MMD (e.g. on HF, UHF/VHF, or on Satellite, at Tech Saturday, or during contests or other), please email me the electronic log entries in ADIF format from the logger program you used for those contacts?

That way, just like I do following field day each year, I can get them uploaded to LOTW and to eQSL to offer the courtesy of an electronic QSL to those who make contact with us as W2MMD here in NJ.

Thank you

Tuesday AfterNoon Net @ 1200 Hours

147.180 MHz (+) (131.8) Repeater & EchoLink W2MMD-R

Here is the schedule for the upcoming weeks

Greg Ciraula K3GC : February 3, 2026
Steve Farney W2SEF : February 10, 2026
Rich Subers W2RHS : February 17, 2026
Jeff Garth WB2ZBN : February 24, 2026

Greg Ciraula K3GC : March 3, 2026
Steve Farney W2SEF : March 10, 2026
Rich Subers W2RHS : March 17, 2026
Jeff Garth WB2ZBN : March 24, 2026
Steve Farney W2SEF : March 31, 2026

Greg Ciraula K3GC : April 7, 2026
Steve Farney W2SEF : April 14, 2026
Rich Subers W2RHS : April 21, 2026
Jeff Garth WB2ZBN : April 28, 2026

If you would like to be a Net Control Station for this net, please contact Steve Farney W2SEF

Thursday Night Rag Chew Net @ 2000 Hours

147.180 MHz (+) (131.8) Repeater & EchoLink W2MMD-R

Here is the schedule for the upcoming weeks

Jeff Garth WB2ZBN : February 5, 2026
Mary Delemarre W2TDS : February 12, 2026
Gary Mirkin WA3SVW : February 19, 2026
Steve Farney W2SEF : February 26, 2026

Jeff Garth WB2ZBN : March 5, 2026
Mary Delemarre W2TDS : March 12, 2026
Gary Mirkin WA3SVW : March 19, 2026
Steve Farney W2SEF : March 26, 2026

Jeff Garth WB2ZBN : April 2, 2026
Mary Delemarre W2TDS : April 9, 2026
Gary Mirkin WA3SVW : April 16, 2026
Steve Farney W2SEF : April 23, 2026
Jeff Garth WB2ZBN : April 30, 2026

If you would like to be a Net Control Station for this net, please contact Jeff Garth WB2ZBN

Need a ride to a Club meeting, event, or activity?

Just send a message to the Club's e-mail reflector asking if a member can pick you up

GCARC <*at*> MAILMAN <*dot*> QTH <*dot*> NET

All Club members have access to this FREE e-mail service

Gloucester County Skywarn Net

The Gloucester County Skywarn Net is held every Sunday @ 1930 Hours on the 147.180 MHz (+) (131.8) Repeater & EchoLink W2MMD-R

All Are Welcome To Participate
Net Control Station : Jeff Garth WB2ZBN

Gloucester County ARES Net

The Gloucester County ARES Net is held every Sunday @ 2000 Hours on the 147.180 MHz (+) (131.8) Repeater & EchoLink W2MMD-R

All are welcome to participate

Net Control Stations :

Al Arrison KB2AYU; Angela Metzger KE2DRJ; Bob Keogh KD2NEC; Craig Metzger KE2GNU; Gary Mirkin WA3SVW; Karl Frank W2KBF; Steve Farney W2SEF; & Todd Woodward KD2ESH

Karl Frank W2KBF : February 1, 2026
Bob Keogh KD2NEC : February 8, 2026
Todd Woodward KD2ESH : February 15, 2026
Craig Metzger KE2GNU : February 22, 2026

Steve Farney W2SEF : March 1, 2026
Al Arrison KB2AYU : March 8, 2026
Gary Mirkin WA3SVW : March 15, 2026
Angela Metzger KE2DRJ : March 22, 2026
Karl Frank W2KBF : March 29, 2026

Happy Easter : April 5, 2026
Bob Keogh KD2NEC : April 12, 2026
Todd Woodward KD2ESH : April 19, 2026
Craig Metzger KE2GNU : April 26, 2026

Anyone who is interested in joining the Gloucester County ARES Team, is invited to contact Bob Keogh at KD2NEC @ QSL.NET

Monday & Thursday Night 40 Meter Net @ 1900 Hours
7.170 MHz (Plus or Minus 5 to 10 kHz)
NCS : Jim Clark KA2OSV

ARRL Learning Center
https://learn.arrl.org

Discover how to make Amateur Radio your own.

Online courses from the ARRL Learning Center provide ARRL members with additional instruction and training for getting on the air, emergency communications, and electronics and technology

At The Repair Bench…

A monthly column describing a recent repair bench event.

By Chris Prioli AD2CS - chris@ad2cs.com - www.ad2cs.com

Icom IC-7300 Transceiver - February 2026

Figure 1 : Icom IC-7300 Transceiver

I recently had a fellow GCARC Club member call me and ask for some help with his failed radio - the popular Icom IC-7300 - that had suddenly lost all output power. Now… sudden loss of output power is not really uncommon, but it is not at all a common occurrence with this particular radio. The **IC-7300 (Figure 1)** is a fairly robust unit, and its protection circuits are quite capable of doing power roll-back when a serious antenna mismatch is detected. Because of the circumstances, I decided that I would go to his place and pick up the radio, and would do some other investigation while I was there.

I brought my RigExpert AA-650 ZOOM and my CCT-01 coaxial cable tester with me. Upon arrival, I first checked the radio and verified the reported output condition as shown by the radio itself. I next tested the short coaxial cable that was in use between the radio and its attached ***MFJ-993B IntelliTuner Automatic Antenna Tuner***. That cable checked out just fine, as did a second cable that the owner had sitting there for backup use. I then checked the condition of the antenna system beyond the tuner, using the RigExpert. The antenna system left a lot to be desired in terms of acceptable matches across the various bands on which he operates, but the condition was not bad enough in my opinion to account for the lack of output power by itself, or any potential radio failure. I decided to take both the radio ***and*** the IntelliTuner back to the shop with me for further investigation. The customer also requested that I replace the real-time-clock (RTC) battery while I had the radio in the shop. He did not say why he wanted this done, so I sort of figured that it was a preventative measure based on the age of the radio.

At the shop, I began by connecting a directional wattmeter to the radio and again verified that there was no measurable output. I opened up the radio and starting by measuring the output from the RF board into the power amplifier (PA) board, and found a healthy output signal going into the PA. Next, I started making measurements and various tests on the PA board itself. What I found was quite surprising, in that the unit had suffered a complete failure of the PA chain, taking out a total of five transistors on that board.

The power amplifier chain consists of a 2SK2854 N-channel MOSFET used at the PA input as an RF amplifier, which then feeds into the pre-drive amplifier transistor, an RD01MUS2 N-Channel power MOSFET. The output of the pre-drive amplifier is then directed to and through the drive amplifier transistor, an RD15HVF1 N-channel power MOSFET. Finally, the drive amplifier output is directed to the power amplifier, which is made up of two RD70HVF1C N-channel power MOSFETS in a push-pull configuration. ***All five of these transistors had failed!***

As most of my long-time readers are well aware, I am never content with simply repairing a faulty device. I also have this compelling need to know how or why the failure occurred. Part of this is ego. I simply do not want a unit that I have repaired to fail immediately, or shortly after, being placed back in service. But… another part of it is a sense of responsibility to the customer.

At The Repair Bench - Continued on page 24

At The Repair Bench - Continued from page 23

To my way of thinking, a customer who has paid a repair invoice deserves the most complete service that the technician - namely yours truly - can provide. This includes investigating the cause of the failure so as to prevent repeat failures whenever possible.

I have written another article in this series that describes the cause of the failures in this radio, but I will (spoiler alert) tell you that the failure was caused by a failure of the MFJ-993B IntelliTuner Automatic Antenna Tuner that was in use with this radio. I will not go into the specifics of that failure here. You will need to read the At The Repair Bench column in the January 2026 CrossTalk to find out about the particulars of the MFJ-993B failures. Suffice it to say that it was a good move on my part in bringing both the radio and the tuner to the shop.

Going back to the IC-7300… I left off by stating that all five transistors in the PA chain had failed. This is a rather unusual occurrence. I rarely see such complete destruction in a power amplifier failure. However, as will be seen in the MFJ-993B article, the radio was in essence operating with a wide-open antenna channel. There was no antenna load whatsoever connected to the radio at the time that the failure occurred. In addition to that, the antenna was in poor condition as regards tuning, so that when there had been a signal path, it was in terrible condition.

The customer normally operates primarily on 40 meters, almost exclusively in FT8 mode, specifically at about 7.074 MHz. His antenna was a wire dipole fed via a length of 450Ω window line. The antenna, which had been installed many years ago, had dipole leg lengths of approximately 47 feet each, for a total dipole length of about 94 feet. Calculated using the normal equations, as shown below, the dipole leg length should have been much shorter :

$$\frac{984}{7.074} = 139.101$$

$$139 \times 0.5 = 69.5$$

$$69.5 \times 0.5 = 34.75$$

$$34.75 \times 0.95 = 33.0125$$

Let's work this through. The first line shows the calculation for the free-space length in feet of a full wavelength (λ) antenna at the specific frequency of 7.074 MHz. The second line shows the reduction to a half-wavelength (λ/2) antenna at that same frequency. On the third line, we calculate the free-space length of each segment of that λ/2 antenna. Finally, on the fourth line, we derate that length by 5% to account for the fact that the signal is being transmitted in a wire instead of being transmitted in free space. Thus, each segment of the dipole should have been at about 33 feet instead of the nearly 47 feet that they were in actuality.

So… what effect did this over-length antenna have? Simply put, it made the antenna tuner work harder to match the antenna to the radio, and in all likelihood, the tuner could not do so, causing the radio to roll back its output power almost all of the time that the radio was operated in TX mode. This in turn taxed the power amplifier chain, generating excessive heat and putting undue stress on all of the PA chain components. It therefore did not take much of a push to send the whole chain over the edge and into failure. The problems in the MFJ-993B provided just that little shove.

Repair of the radio consisted of replacing the five transistors. Most of these transistors are surface mount devices (SMD's), and all of them, as already mentioned, are MOSFET's, mostly power types. The 2SK2854 transistor Q101 and the RD01MUS2 transistor Q111 can be replaced using standard SMD procedures. The driver and power amplifiers are a bit different. These three transistors are all secured to the chassis via machine screws that go through the transistors and into threaded holes in the chassis. The two power amplifier transistors each have a sheet metal shield installed over the body of the device, each being retained in place by the two machine screws that retain the transistor to the chassis.

At The Repair Bench - Continued on page 25

At The Repair Bench - Continued from page 24

The amplifier driver transistor uses a single machine screw through the tab of the transistor.

The repair process is as follows. Begin by removing the PA PCB from the chassis, which starts with taking a photograph of the installed and connected PA board, clearly showing all of the various connectors that attach to the board. Next, disconnect the various connectors. These include three coaxial cables (J101, J801, and J961), one Molex connector (J331), and one ribbon cable (J301). The incoming DC power connector must be unclipped from the rear chassis panel. Then remove the eight machine screws that secure the PA board to the chassis, followed by the four machine screws and sheet metal shields from the power amplifier transistors, and the single machine screw and bushing that secures Q121 to the chassis. Lift the PCB out of the chassis, and carefully wipe off all of the old thermal compound from the chassis bosses where it was applied.

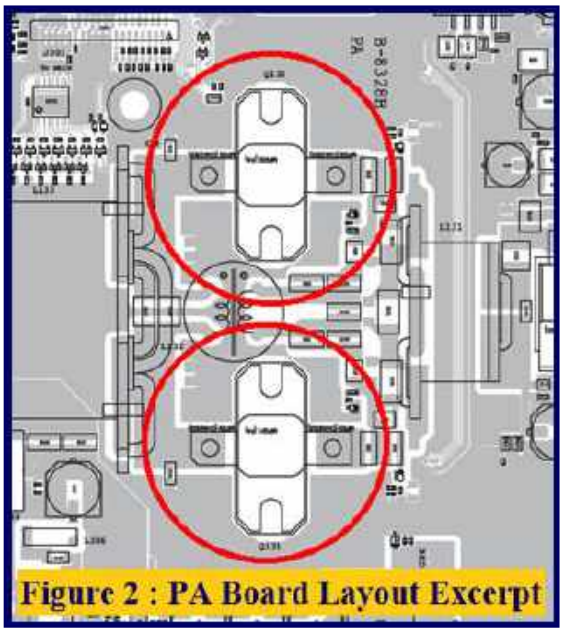


Figure 2 : PA Board Layout Excerpt

Once the PA PCB is out of the chassis, basic SMD removal techniques can be employed for Q101, Q111, and the two power amplifiers Q131 and Q132. Solder wick or a vacuum solder removal device should be used to de-solder Q121 from the PCB. The printed circuit board (PCB) must be cleaned thoroughly of excess solder and any flux residue, as well as of any thermal compound on its lower surface.

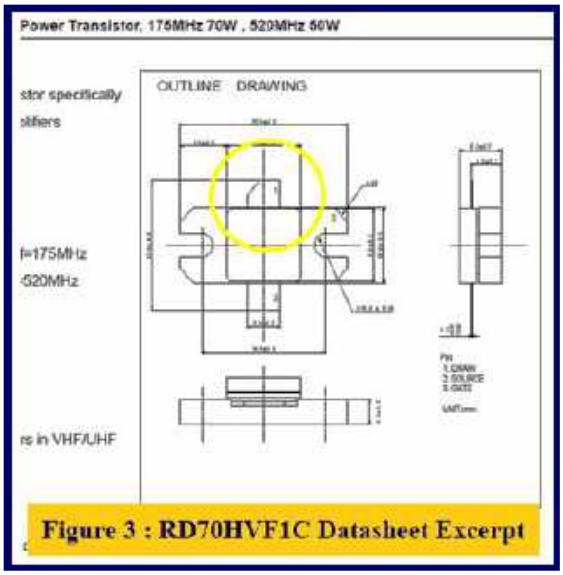


Figure 3 : RD70HVF1C Datasheet Excerpt

Install the 2SK2854 Q101 and the RD01MUS2 Q111 transistors to the PCB in the usual manner for surface-mount devices, being sure not to form any solder bridges between traces and/or pads.

Set the PA board back in place and start all of the PCB retaining screws into their respective holes in the chassis. Do not tighten the screws at this point, as the PCB will be removed again before the job is done. Next, place the two power amplifier transistors into place in their holes in the PCB. ***Pay careful attention to the proper orientation of these transistors, as follows.***

The RD70HVF1C N-channel power MOSFET's used as the power amplifier transistors, commonly called the "finals", have a unique shape as shown in **Figure 2**. The **Figure 2** illustration is an excerpt from the IC-7300 service manual's PA PCB component layout diagram. Refer also to the datasheet excerpt in **Figure 3**. Note that each of these two transistors has two slotted mounting tabs through which the retaining screws pass, and then there are two foil leads that are surface-soldered to the PCB. Comparing the component outlines from **Figure 2** to the datasheet excerpt in **Figure 3**, we can see that the ***drain*** lead, marked as terminal #1 in the **Figure 3** drawing, has a clipped corner on the foil lead, while terminal 3, the ***gate***, has no clipped corners. A careful look at the PCB will reveal that the pad for the ***drain*** terminal also has a clipped corner, which will align with the clipped corner on the transistor lead. Installing these transistors in an incorrect orientation will cause immediate failure of the new transistors.

At The Repair Bench - Continued on page 26

At The Repair Bench - Continued from page 25

To install these transistors, first identify the correct orientation as explained above. Next, with the PCB in place in the chassis and the PCB retaining screws started into their holes, drop the power amplifier transistors into their holes in the PCB and start their retaining screws into their holes, but once again, do not tighten them, and do not put the shields in place yet. Tack-solder the transistors to the PCB at both the ***gate*** and the ***drain*** terminals.

Next, drop the RD15HVF1 Q121 transistor into place and start the machine screw, with its bushing in place on the screw, into the hole and run this screw down until the bushing centers in the hole, but do not fully tighten the screw. Doing so will make soldering the transistor more difficult because of the heat-sinking property of the chassis when the screw is tight. Now, solder this transistor into place on its traces. Then, remove all of the screws and lift the PA PCB back out of the chassis.

With the PCB on the bench once again, finish soldering the two power amplifier transistors Q131 and Q132 to the PCB, being sure to adequately solder each of the foil leads to the PCB pads. The PCB is now ready for reinstallation.

Apply a light coating of thermal compound to the bosses where the driver transistor Q121 and the two power amplifier transistors Q131 and Q132 will mate with the chassis. Set the PCB down into the chassis and start all of the eight PCB retaining screws into their holes once again, but do not tighten them yet. Next, insert the machine screw and bushing into the tab of the driver transistor Q121, but once again, do not tighten it yet. Now set the two sheet metal shields into place over the power amplifier transistors Q131 and Q132, and insert their machine screws through the shields and into the chassis. Tighten these screws securely.

Tighten the machine screw in the driver transistor Q121, making sure that the bushing centers properly in the transistor tab. Then, following the numerical sequence marked on the PCB adjacent to each of its securement holes, tighten the PCB retaining screws in two stages. Re-connect all of the board connecting cables and install the DC power connector into the chassis rear panel.

I usually do not do a deep-dive into specific procedures in these monthly articles. Due to the ease with which damage can be done to this radio during transistor replacement, I felt that an explanation of the process might be well-advised in this case.

Simply replacing the transistors does not complete the repair in this radio. There are adjustments that are required to be done following such replacements. The IC-7300 service manual provides the procedure quite clearly, and that is what I used as a reference when making these adjustments.

The first step in the adjustment process is to ascertain that the radio has the most recent firmware release installed, and to upgrade the firmware to that level if it is not already there. In accordance with the IC-7300 service manual, alignment adjustments are generally made via software. However, there are some hardware items required in order to accomplish the task. One of these hardware items is a shunt plug, which is easily fabricated using a 1/8” mono TRS phone plug.

It is very important that the device firmware is fully updated. The current firmware as this is written, version 1.42, is available at the Icom website, and is located on the IC-7300 downloads page. Prior to installing the firmware update, it is strongly advised that the radio’s settings be backed up to a Micro-SD card inserted into the card slot on the front face of the radio. Then, after the firmware update, the settings can be restored directly from the Micro-SD card.

At The Repair Bench - Continued on page 27

At The Repair Bench - Continued from page 26

The IC-7300 service manual, which is readily available online, provides the step-by-step alignment instructions together with the target values for each adjustment to be made. For that reason, I will not go into describing the procedure in any more detail than has already been shown. What I ***will*** say is that if any given step of the alignment process does not result in the expected outcome, go back over the process starting with the last step that ***did*** provide the expected results. This alignment is really very hard to mess up, so long as the instructions are followed exactly as written.

Once the alignment is completed, I usually perform a final test of the transmitter output in all modes and on all bands, recording the results of these tests in my repair records for the unit. This allows me to have something definitive to which I can refer if a problem should arise later on, instead of having to rely on my memory. This is a step that I take due to the large volume of repair work that I do; it may not be necessary for the ham working on his/her own equipment.

In this case, the unit exhibited a maximum power output of 102 Watts on the FM mode, 100 Watts on RTTY and also on CW operations, and 99.5 Watts on single sideband modes. Modulation was clear and crisp, and the audio throughput was close to perfect. The two-tone linearity test showed near perfect linearity. Receiver sensitivity and selectivity were both about as best as can be expected from this particular model.

One anomaly that was noted and subsequently corrected was the extremely short transmit delay period. The transmit delay function is important when using many types of connected accessories, but especially so when an RF amplifier is connected downstream of the transmitter. It is important that the amplifier is fully switched and ready for an incoming signal before the transmitter actually sends that output to the amplifier.

The IC-7300 provides an adjustable transmit delay period that ranges from a minimum nominal delay of ten milliseconds up to thirty milliseconds, in five millisecond increments. What I noted was that the transmit was virtually instantaneous, with no apparent delay at all. Now… with the type of operation that the owner of this radio was customarily employing, this was really no big deal, though it was not correct. According to published information, the nominal ten-millisecond delay setting will normally result in a measured delay of about seven milliseconds. In this case, the measured delay was only 2.6 milliseconds. This was a change that occurred on installation of the v1.42 firmware; the radio had previously been running on firmware version 1.40 and had a measured transmit delay of 9.4 milliseconds.

As was already mentioned, this short delay could be very problematic if an RF amplifier is installed after the transmitter, as it would potentially permit ***"hot switching"*** of the amplifier, where the amplifier is attempting to shift into its transmit mode with an incoming RF signal already present. This can and usually will cause damage to the amplifier, and especially so when the amplifier is a tube-type appliance.

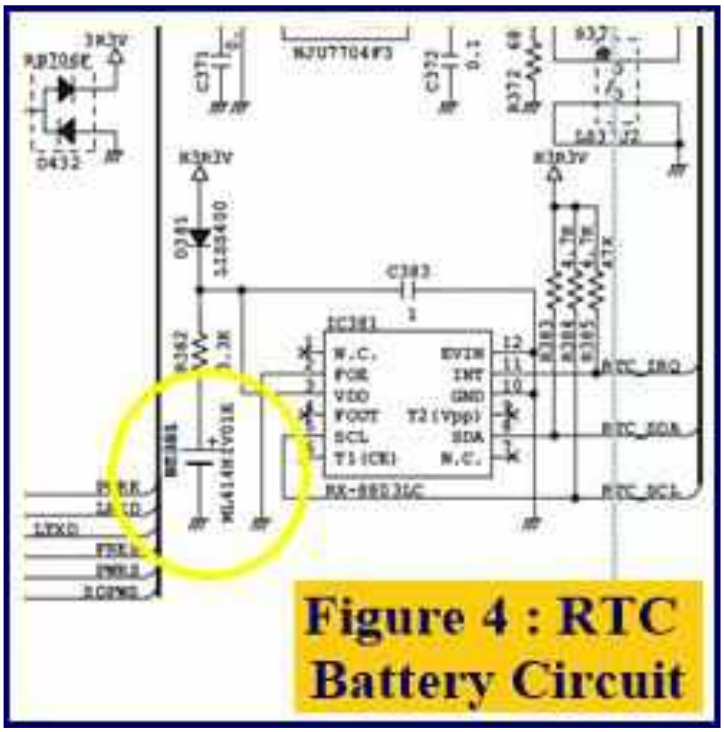
My first step in trying to remedy this situation was to set the TX DELAY value to its maximum value, a nominal 30 milliseconds. This had an immediate effect, with the measured delay now being 31.4 milliseconds. I then set the TX DELAY value to its default setting of ***"OFF"***. This is supposed to produce the minimum ten-millisecond delay period. In this case, it produced a measured 8.3 millisecond delay. I was happy with that, so I left it there. I did, however, follow the same steps with the 50M TX DELAY setting, which sets the delay value for the 6-meter band.

It is noteworthy that this value was not as expected following a firmware update, and it is rather unlikely that many hams doing their own firmware update would have noticed the lack of a delay. Quite frankly, I am sort of surprised that I noticed it, but I did. Fortunately, it was a very simple fix… but it is something for which I will watch out in the future.

At The Repair Bench - Continued on page 28

At The Repair Bench - Continued from page 27

I was not finished with the radio yet. The customer had asked for a replacement of the RTC battery, remember? This battery is a tiny ML414HIV01E coin cell that has welded solder tabs installed to the cell. When I say tiny, I really mean just that. The battery number gives us its dimensional sizes - 4 mm diameter by 1.4 mm thick. For comparison purposes, consider that 4 mm is equal to about 5/32". It is a 3.0V cell that is charged by the H3R3V supply line on the ***MAIN*** board of the radio. The battery feeds the RTC chip IC381, an RX-8803LC integrated circuit (IC) through a 3.3kΩ current-limiting resistor **R382 (Figure 4)**. The charging current is delivered through an L1SS400 diode D381, whose job is to isolate the coin cell, allowing it to permit the flow of current to the RTC chip but ***not*** to the remainder of the radio's circuits, while also permitting the flow of charging current into the coin cell. Enough about the circuit. Let's talk about replacing the coin cell.

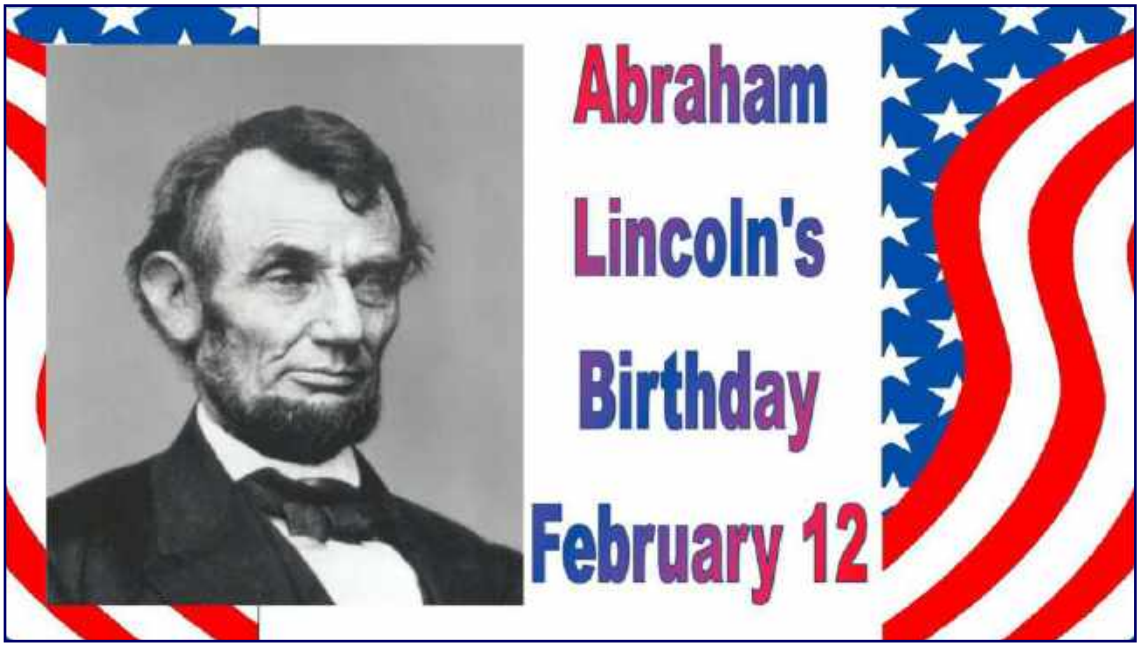


This cell is most easily replaced by first removing the ***MAIN*** board from the radio chassis. There is a series of ribbon cables to be disconnected, as well as one coaxial cable and three Molex connectors. As always, a photo is worth taking so as to help you with the reassembly. The ***MAIN PCB*** is located under the lower cover of the radio, but both the upper and lower covers must be removed, as the front panel retaining screws, one at each corner of the front panel, must also be removed so that the front panel can be swung off to one side. This permits the range of movement necessary to be able to get the ***MAIN*** board out of the chassis. There are seven retaining screws for the ***PCB***. The board itself sits on a series of pins on the chassis, and is supported underneath by a bracket that attaches to the ***MAIN*** board via some adhesive foam. A bit of maneuvering is required to get the board out, but it is easily done, and the board is on the bench before you know it.

As I usually do, I used my hot tweezers to remove the original cell. I do not mind doing this, because the cell is being removed for replacement, so I don't really care if I make a direct short circuit across the cell as I desolder it. The cell is, in most cases, depleted or nearly so anyway. The important point is that the new cell cannot be installed using the hot tweezers, as that would deplete the cell almost immediately via the short circuit created by the tweezers. Instead, a fine-tipped soldering iron and some fine rosin-core solder is used to solder the new cell into place, just like any other SMT device. I installed the new coin cell and then reassembled the radio. Installation of the ***MAIN PCB*** is simply a reversal of the removal process. The tightening sequence for the seven retaining screws for the board is identified on the board, by a numeral printed adjacent to each screw location. Tighten the screws in two steps, following the sequence given.

I delivered the radio back to the customer, where I also helped him to adjust his dipole length and to install a coaxial feedline and balun in place of the window line. His window line ran just a few inches from an aluminum downspout at the corner of his house, and its extra length was sort of doubled back on itself. These are not ideal conditions for any ***OWL*** installation. Changing his setup over to a coaxial feedline really cleaned things up for him. The radio - and the repaired tuner (more about that in its own article) - worked flawlessly, we thought. However, as it turned out, there was a small problem that cropped up later. I will address that in another article, as it is a topic that deserves its own story.

That just about wraps this one up. See you next month!



Gloucester County Amateur Radio Club
YouTube Channel
https://www.youtube.com/@W2MMD

What's happening in the ARRL Southern New Jersey Section??
Subscribe to the ARRL SNJ Section Groups.IO
https://groups.io/g/ARRLSouthernNewJerseySection

GCARC VE Team : 2026 License Exam Monthly Summary

	Technician Class		General Class		Amateur Extra Class	
	Monthly	YTD	Monthly	YTD	Monthly	YTD
January	1	1	0	0	0	0
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

Club Member DMR IDs

Club Member	DMR ID
W2MMD Clubhouse	**3198604**
Lance Appel KE2UC	3200487
Cole Bonner KE2GYA	3221097
Joshua Boylan KE2FSC	3216140
Steven Broomhead KB2RTZ	3218247
Alex Calabrese WA2ADS	3100583
Chuck Capasso WB2PGE	3169781
Todd Cecilio KA2YNT	3169458
Anthony Cerami N2OAC	3202759
Mark Clark N3QMJ	3102110
Norm Coltri K2NRC	3183851
Holden Correia-Fisher KD2JPV	3104911
Mike Covaleski N2MMC	3134855
Walter Coward WX2E	3166863
Doug Dersch KD2VQA	3193630
Daniel Devlin KC2GYU	3210633
Thomas Distelcamp Sr KC2GYC	3110869
Glenn Dougherty N2YIO	3161836
Adam Duncan W3DUN	3202691
Herb Dyer KT2Y	3134907
Harry Elwell AD5TT	3128498
Misael Fernandez Jr KE2EBL	3214756
Joseph Fisher KC2TN	3134720
James Foster W3JNF	3142117
Karl Frank W2KBF	3146716
Joseph Gadoury N2JJG (KE2AKT)	3196520
Glen Guenther KE2BUO	3202079
Melissa Guenther KE2BWZ	3202496
Gary Hewitt N2WHV	3134654
Paul Kaplan N2FOB	3134796
Chuck Lanard KD2EIB	3134298
Darren Malone KD2ALQ	3215227
Dean Marzocca N2TNN	3206232

Club Member	DMR ID
Gary Mirkin WA3SVW	3165494
Bill McCourt WF1L	3152173
Scott McNutt N3ADP	3189434
John Murrow KD2NHK	1134122
John Newman WB4YLM	3213273
Phil Nunzio WA3RGY	3134336
John O'Connell K2QA	3110610
Robert Pantazes W2ARP	3157208
Sheldon Parker K2MEN	3214037
Jonathan Pearce WB2MNF	3163415
Michael Pecorini K2MRP	3132996
Michael Pentimall KC3VTF	3203601
John Price III KD2QYC	3123583
Chris Prioli AD2CS	3195449
Nicholas Reigel KE2DCD	3128983
Michael Resnick N2WOQ	3215856
Frank Romeo N3PUU	3134935
Terry Rossi N2LQH	3183681
Len Rust III W2LJR	3186225
Len Rust IV K2LJR	3196243
Dave Sheppard W2PAX	3112666
Cory Sickles WA3UVV	1142052
James Simeone KC2AOF	3134848
Stan Slachetka WA2JRZ	3213904
Court Smith KD2SPJ	3186243
Jackson Snyder AI2D	3164371
Rich Subers W2RHS	3204316
David Swartout KC3TGB	3198155
Matt Wilson K2MFW	3134607
Bill Wood KD2OSJ	3197459
Jim Wright N2GXJ	3215168
John Zaruba Jr K2ZA	3134331
New Entries As Of 01/20/2026	

For more information, DMR links, and W2LJR's DMR presentations, go to :
https://gloucestercountyarc.weebly.com/dmr.html

DMR Configuration Sequence

1. **Obtain and Configure DMR ID :**
   - **https://www.radioid.net**
2. **Download Contact List :**
   - **http://www.dmrcontacts.com**
3. **Identify Repeater or Hotspot :**
   - **https://www.repeaterbook.com**
4. **Define Talk Groups**
   - **Numerical ID**
   - **Text Name**

https://brandmeister.network/?page=talkgroups

5. **Create Channel**
   - **Select Number**
   - **Assign Name**
   - **Select DMR ID**
   - **Assign Frequency**
     - **Transmit**
     - **Receive**
     - **Bandwidth**
   - **Power**
   - **DMR Mode (Simplex/Repeater)**
   - **TX Permit (Channel Free)**
   - **Assign Talk Group**
   - **Assign Color Code**
     - **Agreed Upon with Other Users**
   - **Assign Time Slot**
   - **Agreed Upon with Other Users**

6. **Create Zone**
7. **Add Channels to Zones**
8. **Configure Features**
9. **Upload Code Plug**
10. **Upload Contact List**

If you recently changed your callsign, contact idteam@dmr-marc.net to have your DMR ID transferred to your new callsign.

8th Annual ARRL SNJ Section Convention

Presented By The

Gloucester County Amateur Radio Club

W2MMD

Celebrating Our 67th Year

HamFest.W2MMD.org

Open To The Public At 8:00 AM : *Rain or Shine*

48th Annual HamFest : Sunday, October 11, 2026

ARRL Field Day 2026
Saturday, June 27, 2026 - Sunday, June 28, 2026

Electronic Tool Tip #16 - Pin Vise & Twist Drill Set

By Chris Prioli AD2CS - chris@ad2cs.com - www.ad2cs.com

Figure 1 : Pin Vise & Twist Drill Set

OK - Heads up! How often do you need to make a ***really tiny hole***… smaller even than the smallest twist drill size that the chuck on your faithful cordless drill can grip? I don't know about you, but I actually find myself doing that quite often. Or, how about if it's not a really small hole, but instead something about a sixteenth of an inch in diameter, but in an unusual location? Have I got your attention yet?

Fairly regularly, I find myself in the unenviable position where the suction tube of my solder station de-soldering pump gun is blocked solid with solidified solder that will not re-melt because it is just far enough away from the heat to do any good. Removal of that solder plug is just about impossible, and it caused me a lot of frustration until I realized that I had the perfect tool for clearing it out - **the Pin Vise and Twist Drill Set shown in Figure 1.**

This kit includes a set of twenty pieces of metric-sized twist drills in high-speed steel ranging from 0.3mm to 1.6mm in diameter. While they can be useful, they are certainly not the best part of this tool kit. No…that honor goes to the **pin vise (Figure 2)**. This item includes two double-ended collets that will tightly grip twist drills from 0.012" through 0.125" (0.3mm to 3mm). I routinely use it with a standard 0.0625" twist drill to clear out the solder plugs from my de-solder gun.

Figure 2 : Pin Vise Exploded View

The pin vise is comprised of five nicely-machined pieces - a body sleeve, a handle with a swivel cap, a collet chuck, and two collets. The collet not in use stores inside the body sleeve under the handle section. The collets are each double-ended, providing four grip ranges that overlap slightly, thus ensuring good grip coverage within the specified twist drill diameter limits.

The set of twist drills is supplied in a slide-top carrier with each drill in its own slot. While the sliding top has an opening that can be indexed with the individual drill slots for extraction of a single drill from the carrier, I find it easier to slide the cover all the way off instead of fussing with the individual slot positions. It is almost impossible to know what diameter drill is in which slot in the carrier. It just makes better sense and is usually quicker to open it all the way and look at the drill sizes to select the desired diameter.

This kit is available online from Amazon, at a price of $7.98 (USD) plus shipping if you are not an Amazon Prime member. Of course, the government has to get its share, so tax will also be applied. Point your browser to **https://www.amazon.com/gp/product/B0105567BU** if you want to investigate this item for yourself.

K2ZA's Field Activation Report

By John Zaruba Jr K2ZA

Program	Designator	Entity	Date / Time	Weather
Parks On The Air	US-1626	Parvin State Park	12/26/25 16:00 UTC	Clear / 28°F

This is the first in (hopefully) an ongoing series of reports on my field operations.

As I've gotten older, the glow of winter weather wears off pretty quickly. My POTA mentor, **Joe Everhart N2CX (SK)** did a lot of activating from the car, so taking a page out of his book, I got a mobile station set up in my truck.

The Yaesu FT-857D and ATAS-120A antenna are as close to a multi-band plug and play HF installation as you can get. The antenna also works with Yaesu's current HF mobile rig, the FT-891. The antenna is automatically tuned with a button press on the radio and covers 40m - 6m. Since the antenna is a compact design, the RF performance is not as good as a full sized wire antenna. Normally, I'm a QRP guy when running bigger antennas, but in this case I was running 50 watts to make up for the deficit.

As part of the installation, there is are 2 $LiFePO_4$ batteries under the back seat of the truck, one 10 Ah, and one 15 Ah, giving me enough battery capacity for most activations with the engine off. To keep from having to fish wires through the truck's firewall, I use a Powerwerx DCDC $LiFePO_4$ battery charger **(1)** connected to the 13.8 VDC power point in the back of the cab. Thanks to Kirchoff's Current Law, when the radio pulls more current than the power point can supply, the batteries take up the slack. In receive mode the power from the truck recharges the batteries making this set up useful for both stationary and mobile operations. For this activation, the engine was running for heat, effectively giving me unlimited run time.

This was also my first use of the Putikeeg Mini Morse Code Key **(2)** which **Dean Marzocca N2TNN** introduced me to at a recent Tech Saturday. The paddles are very reasonable in cost and rival the feel of my BamaTech TP3 paddles. Unfortunately, the German maker of the TP3 recently became a silent key, his family liquidated the business and the remaining stock sold out in an instant.

Parvin State Park POTA - Continued on page 34

Parvin State Park POTA - Continued from page 33

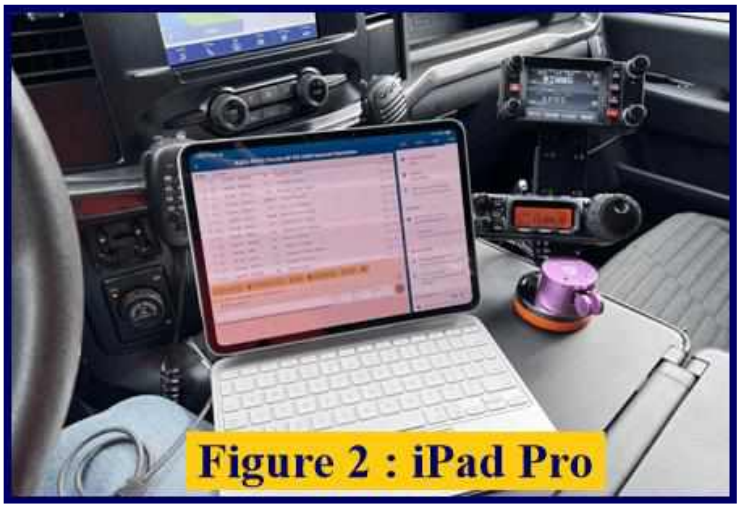


Figure 2 : iPad Pro

My last few field operations I've been using an iPad Pro for logging and this time used the Ham2K Portable Logger (PoLo) app. It's very full featured and once you get used to the work flow it really makes logging easy. Unfortunately, PoLo is a mobile app only, currently no laptop version exists, unlike HAMRS **(3)** which has versions for Windows, MacOS, Linux, and Raspberry Pi. HAMRS is also a very useful logger, but the work-flow is different so jumping back and forth requires some adaptation. On the plus side, both PoLo and HAMRS are available in the Google Play store for Android phones and tablets.

One other new addition was using APRS to spot myself. This was a good opportunity to test since the park has good cell coverage and I'd be able to self spot if the APRS method didn't work. To self spot using APRS, send a message to the call sign APSPOT in the format ***"! POTA US-1626 14.059 CW"***. If successful, you will receive an acknowledgement message and you are spotted!

At The Park

Parvin State Park has several trails with periodic benches that can be used for operating, and while I've never had any interaction with rangers, using self supporting antennas rather than putting them in trees is a good choice. If operating from the car, there are three parking lots. The first is the large main lot off of Almond Road at the beach entrance, a smaller lot at the lake dam called Fisherman's Landing, and another large lot at the Thundergust Day Use area.

My activation was successful, **25 QSOs (23 US, 2 DX) (See Figure 4)** in a little over half an hour. Parvin is a great place to go, RF quiet and easy access, but can get a little crowded in the nice weather. When you get done operating, make sure to take a walk. The trails are well groomed and well marked. There are camping spots for tents and smaller RV and cabins in the Thundergust loop, but no electrical or water hookups at the camp sites.

Figure 3 : Thundergust Day Use Area Parking Lot

Parvin State Park POTA - Continued on page 35

Parvin State Park POTA - Continued from page 34

15	2025-12-26	16:45	KB4HG	20m	14.048	CW	EM60jl		United States	Rhett W Isley
16	2025-12-26	16:44	N3FVP	20m	14.048	CW	FM19mm		United States	Gerald B Crawford
17	2025-12-26	16:42	NA2B	20m	14.048	CW	EL87tq		United States	Charles P "Chas" Walker
18	2025-12-26	16:40	K9IS	20m	14.048	CW	EN55qd		United States	Steven J Whitton
19	2025-12-26	16:39	KA3IHC	20m	14.048	CW	FN34gq		United States	Peter S Butchko
20	2025-12-26	16:38	N9EDL	20m	14.048	CW	EN71me		United States	Edward A "Ed" Leonard
21	2025-12-26	16:35	NM8O	20m	14.048	CW	EN80lb		United States	Jimmie "Jim" Profitt
22	2025-12-26	16:34	VA3UZ	20m	14.048	CW	EN92lq		Canada	Allan Timothy Harvey
23	2025-12-26	16:33	KG9HV	20m	14.048	CW	EN60nj		United States	John W Schanlaub
24	2025-12-26	16:32	VE3PLN	20m	14.048	CW	EN93pd		Canada	J. Randall Lowry
25	2025-12-26	16:31	NØFXQ	20m	14.048	CW	EM92mh		United States	Richard A "Rich" Black
26	2025-12-26	16:30	N6MRS	20m	14.048	CW	EL88xb		United States	Michael R Shreve
27	2025-12-26	16:29	KG4BIG	20m	14.048	CW	EM78rf		United States	Kenneth L Wilson
28	2025-12-26	16:28	N4BIY	20m	14.048	CW	FM06cd		United States	Charles L Ingram
29	2025-12-26	16:27	N1CGP	20m	14.048	CW	FN54hm		United States	David J Spencer
30	2025-12-26	16:25	K4KVC	20m	14.048	CW	EM73qk		United States	Kenneth A Gusler
31	2025-12-26	16:24	W1BLU	20m	14.048	CW	FM03af		United States	David G "Blue" Konz
32	2025-12-26	16:23	KEØVVW	20m	14.048	CW	EN34ae		United States	Ryan A Tesch
33	2025-12-26	16:21	K4UI	20m	14.048	CW	EM76er		United States	Rickey L Whitlock
34	2025-12-26	16:19	KC8ZWP	20m	14.048	CW	EN90hu		United States	Everett D Todd
35	2025-12-26	16:18	K4OTT	20m	14.048	CW	EM74xw		United States	David A "Andrew" Burn...
36	2025-12-26	16:16	KØBXB	20m	14.048	CW	EN52up		United States	Martin E Huyett
37	2025-12-26	16:15	N4SSD	20m	14.048	CW	EM65tv		United States	Fred B Hembree, Jr
38	2025-12-26	16:14	OQ5M	20m	14.048	CW	JO20ar		Belgium	Franki Van Neyghem
39	2025-12-26	16:12	N8JY	20m	14.048	CW	EN82fo		United States	John T Young

Figure 4 : POTA Log

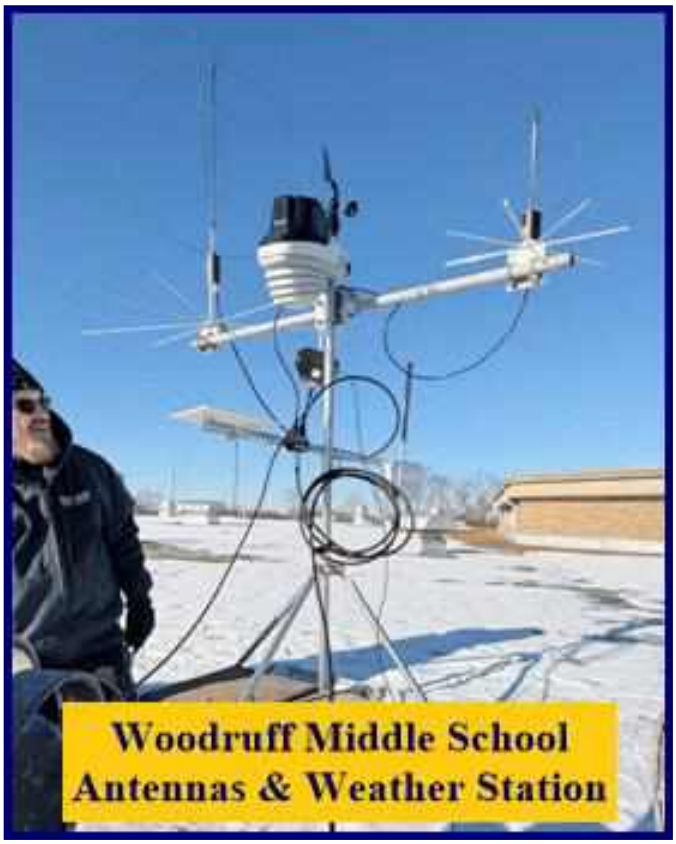
I hope you found this report helpful, feedback and questions can be sent to k2za@icloud.com.

Notes :

1. **https://powerwerx.com/dcdc-charger-lifepo4-8a-adjustable**
2. **Putikeeg Mini Morse Code Key - CW Dual Paddle with Magnetic Base, Magnetic Return Paddles Morse Lambic Key for Amateur Ham Radio (Silver) (Purple) https://a.co/d/eTBvJ4S**
3. **https://hamrs.app**

Woodruff STEM Ham Station Operational!

By Jon Pearce WB2MNF



After months of eager anticipation, the ***Amateur Radio antennas*** are finally up and running into **Angela Metzger KE2DRJ**'s classroom at Woodruff Middle School. The setup, installed by the school district's facilities team, features a sturdy aluminum base secured with four heavy concrete pavers on the roof directly above Angela's classroom. A tall mast rises from the base, supporting two horizontal cross arms :

- One cross arm holds the ***2m/70cm "eggbeater" antennas*** - generously donated by **Mike Thompson KG4JYA** - perfect for omnidirectional VHF/UHF coverage and satellite work.
- The other cross arm supports a ***solar panel*** powering the ***Meshtastic 915 MHz STEM*** device that we hope will extend Meshtastic coverage from the Clubhouse node south into Cumberland County.
- The ***AcuRite weather station*** sits atop the mast.

A separate ***25-foot end-fed HF antenna*** stretches between the mast and a nearby light post about 60 feet away.

To bring everything indoors safely, a weatherproof PVC conduit was run through a drilled hole in the cinder block wall, feeding two coaxial lines into the classroom. The exterior weatherproof box seals everything.

Two feed lines run from the antennas thru the box into the classroom :

- One LMR-400 feedline from the eggbeater antennas (combined via a diplexer) connects directly to the ***Yaesu FT-991A transceiver*** for VHF/UHF and satellite operation.
- The other RG-8X line runs from the HF end-fed antenna routes through an ***MFJ automatic antenna tuner*** to the 991 for HF operation.

This station opens up opportunities for students :

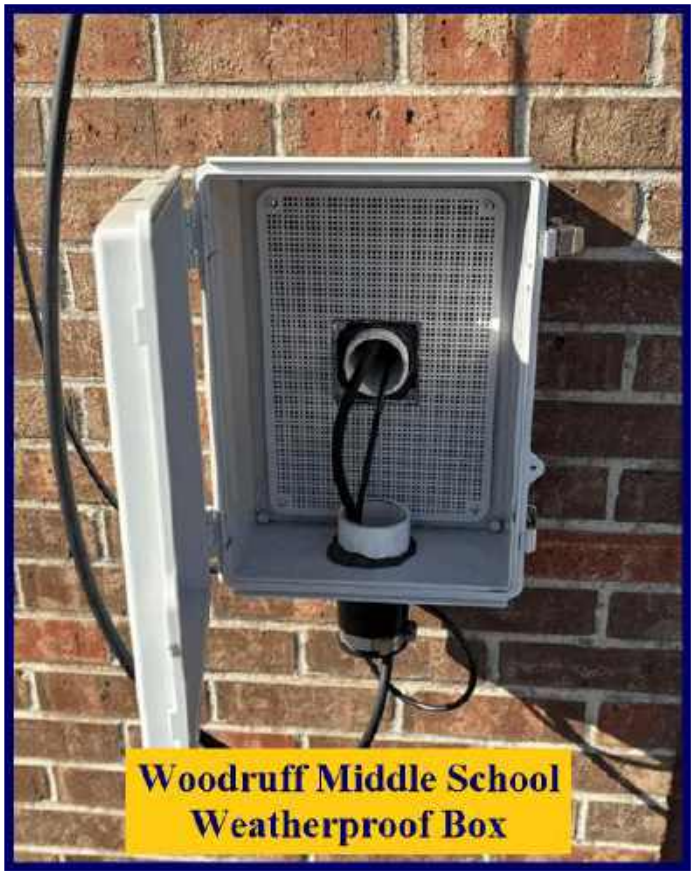
- Making real ***HF voice and digital contacts*** around the world, experimenting with ***satellite communications*** using the eggbeaters, and diving into ***Meshtastic*** mesh networking.

It also allows introducing radio-related activities into the STEM curriculum and combining them with actual ham operating.

Having an actual ham station as part of a STEM program was highly recommended at the ARRL Teachers Institute workshop Angela attended last summer, and hopefully it will encourage some of the students to pursue their own licenses.

Woodruff STEM Ham Station Operational! - Continued on page 37

Woodruff STEM Ham Station Operational! - - Continued from page 36



Massive Solar Storm History In Tree Rings?

By Jim Wright N2GXJ

For those who play on HF, where solar conditions greatly affect enjoyment levels, space weather is a familiar term. Some may already be familiar with a daily person-updated (not AI) web-page by same name : **https://spaceweather.com**. If you've not seen this site, in my opinion, it is worth a daily look. Here you can see current conditions at a glance on the left, often interesting news items and articles in the middle, and ability to call up articles from the archive on the right.

Though many articles have been of interest, there's one in particular that intrigued me enough to want to bookmark that date, so I did. This was the January 30, 2025 article titled "A Warning from the Trees".

Here's the archive link : **https://spaceweather.com/archive.php?view=1&day=30&month=01&year=2025**

In this article the author asks, then answers "how bad can a solar storm be? Just ask a tree". Intrigued, I read on. Apparently in 2012, a doctoral student studying individual tree rings in the stump of an ancient Japanese cedar tree discovered an unusual jump in carbon-14 levels, an isotope created by cosmic radiation, in one of the rings associated with the year 774-775 AD. The article goes on to say that other teams were then able to confirm this same spike in wood samples from other countries including Germany, Russia, the United States, Finland, and New Zealand. Whatever happened, trees all over the world experienced it.

So what was this? The article goes on to suggest an answer, saying most researchers think it was an extraordinary solar storm. How extraordinary? I'd heard of the Carrington Event of 1859, which many modern communications and power grid planners and designers have used as their worst-case model for solar storms. It is said the data suggests the solar storm of 774-775 AD could have been at least ten times stronger. Let that sink in for a minute!

After this initial discovery, four more examples of what researches are now calling "Miyake Events" were confirmed, dating to the years 7176 BC, 5259 BC, 664-664 BC, and most recently, 993 AD. And the data is not just in the tree rings. Isotope measurements from polar ice-core samples known to trace strong solar activity have been used to collaborate the tree-ring data. So it's real.

From the article, and other articles it links to, we learn that in 2023, incompletely fossilized tree data analyzed from the French Alps suggests there were even earlier Miyake Events. One in 12,350 BC may have been twice as strong as the 774-775 AD event, an event already estimated to be at least 10 times stronger than the Carrington Event of 1859. Wow!

What would happen if there was a similar solar storm today? I'm scared to imagine the possible effects on everything I take for granted today. In this technological age, aren't we totally dependent on the infrastructure behind our cell phones for things like staying in touch with family members, looking things up, getting directions, information and news, credit card buying, online banking, authenticating who we are, and for near everything else today?

The article concludes by suggesting a complete survey of Miyake Events could tell us how often solar superstorms occur and how much peril the sun presents to a technological society. Hopefully we won't see one for many generations to come.

2024-2028 Element 4 Amateur Extra Class License Question Quiz

This month we start with Subelement E5 Electrical Principles (4 exam questions - 4 groups).
(Answers on Last Page)

E5A01
What can cause the voltage across reactances in a series RLC circuit to be higher than the voltage applied to the entire circuit?
A. Resonance
B. Capacitance
C. Low quality factor (Q)
D. Resistance

E5A02
What is the resonant frequency of an RLC circuit if R is 22 ohms, L is 50 microhenries, and C is 40 picofarads?
A. 44.72 MHz
B. 22.36 MHz
C. 3.56 MHz
D. 1.78 MHz

E5A03
What is the magnitude of the impedance of a series RLC circuit at resonance?
A. High, compared to the circuit resistance
B. Approximately equal to capacitive reactance
C. Approximately equal to inductive reactance
D. Approximately equal to circuit resistance

E5A04
What is the magnitude of the impedance of a parallel RLC circuit at resonance?
A. Approximately equal to circuit resistance
B. Approximately equal to inductive reactance
C. Low compared to the circuit resistance
D. High compared to the circuit resistance

E5A05
What is the result of increasing the Q of an impedance-matching circuit?
A. Matching bandwidth is decreased
B. Matching bandwidth is increased
C. Losses increase
D. Harmonics increase

Element 4 Amateur Extra Class Quiz - Continued on page 40

Element 4 Amateur Extra Class Quiz - Continued from page 39

E5A06
What is the magnitude of the circulating current within the components of a parallel LC circuit at resonance?
A. It is at a minimum
B. It is at a maximum
C. It equals 1 divided by the quantity 2 times pi, times the square root of (inductance L multiplied by capacitance C)
D. It equals 2 times pi, times the square root of (inductance L multiplied by capacitance C)

E5A07
What is the magnitude of the current at the input of a parallel RLC circuit at resonance?
A. Minimum
B. Maximum
C. R/L
D. L/R

E5A08
What is the phase relationship between the current through and the voltage across a series resonant circuit at resonance?
A. The voltage leads the current by 90 degrees
B. The current leads the voltage by 90 degrees
C. The voltage and current are in phase
D. The voltage and current are 180 degrees out of phase

E5A09
How is the Q of an RLC parallel resonant circuit calculated?
A. Reactance of either the inductance or capacitance divided by the resistance
B. Reactance of either the inductance or capacitance multiplied by the resistance
C. Resistance divided by the reactance of either the inductance or capacitance
D. Reactance of the inductance multiplied by the reactance of the capacitance

E5A10
What is the resonant frequency of an RLC circuit if R is 33 ohms, L is 50 microhenries, and C is 10 picofarads?
A. 7.12 MHz
B. 23.5 kHz
C. 7.12 kHz
D. 23.5 MHz

E5A11
What is the half-power bandwidth of a resonant circuit that has a resonant frequency of 7.1 MHz and a Q of 150?
A. 157.8 Hz
B. 315.6 Hz
C. 47.3 kHz
D. 23.67 kHz

Element 4 Amateur Extra Class Quiz - Continued on page 41

Element 4 Amateur Extra Class Quiz - Continued from page 40

E5A12
What is the half-power bandwidth of a resonant circuit that has a resonant frequency of 3.7 MHz and a Q of 118?
A. 436.6 kHz
B. 218.3 kHz
C. 31.4 kHz
D. 15.7 kHz

E5A13
What is an effect of increasing Q in a series resonant circuit?
A. Fewer components are needed for the same performance
B. Parasitic effects are minimized
C. Internal voltages increase
D. Phase shift can become uncontrolled

Gloucester County Amateur Radio Club HamFest History

The Club was founded in 1959. There was no hamfest that first year.

1. Our first hamfest was on Thursday, September 8, 1960 at the Molia Farms, Malaga.
2. Our second hamfest was on Sunday, September 17, 1961 also at Molia Farms, Malaga.
3. Sunday, August 12, 1962 Hamfest at Algonkin Gun Club, Monroeville.
4. Sunday, August 04. 1963 Hamfest at Crystal Birch Lake, Chapel Heights, Washington Township.
5. Sunday, July 26, 1964 Hamfest at Crystal Birch Lake, Chapel Heights, Washington Township.
6. Saturday, July 25, 1965 Hamfest at Crystal Birch Lake, Chapel Heights, Washington Township.
7. Friday, August 12, 1966 Hamfest at Algonkin Gun Club, Monroeville.
8. Saturday, July 15, 1967 Baby Hamfest and Club Picnic at Lake Garrison, Monroeville.

No Hamfests from 1968 to 1978.

Our First Annual Hamfest was on Sunday, August 26, 1979 at Gloucester County College, Sewell.
Our 2nd Annual Hamfest was on Sunday, August 24, 1980 at Gloucester County College, Sewell.
Our 3rd Annual Hamfest was on Sunday, August 30, 1981 at Gloucester County College, Sewell.
Our 4th Annual Hamfest was on Sunday, August 29, 1982 at Gloucester County College, Sewell.
Our 5th Annual Hamfest was on Sunday, August 28, 1983 at Gloucester County College, Sewell.
Our 6th Annual Hamfest was on Sunday, August 26, 1984 at Gloucester County College, Sewell.
Our 7th Annual Hamfest was on Sunday, August 25, 1985 at Gloucester County College, Sewell.

Our 8th Annual Hamfest was on Sunday, August 24, 1986 at a new location :

- Gloucester County 4-H Fairgrounds and we have been at the 4-H as of 2026 for 40 years.

We have held our annual Hamfests in August from 1979 to 2005, plus 3 times in the 1960s, for a total of 30 years.

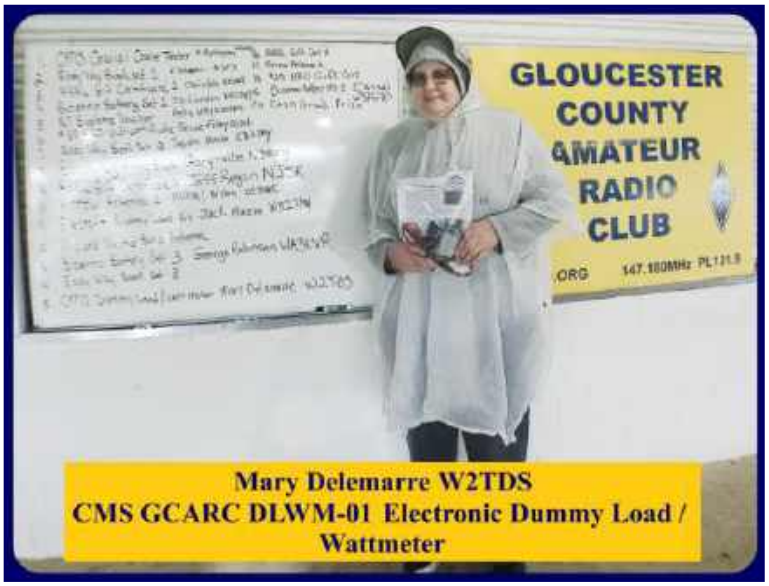
On Sunday, September 17, 2006, we had our first September Hamfest at the 4-H. As of 2026, we have had 20 September Hamfests at the 4-H, plus 2 in the 1960s.

2025 Hamfest Door Prize Winners

Company	Donation	Winner
GCARC Grand Prize	**$200.00 Cash**	**James Skalski Jr KD2ZPL** Manahawkin, NJ
ARRL : www.arrl.org	$50 Gift Certificate	Chris Cote KE5NJ Middletown, DE
ARRL : www.arrl.org	$50 Gift Certificate	Jeff Regan NJ2R Union, NJ
ARRL : www.arrl.org	$50 Gift Certificate	Thomas Preiser N2XW Manahawkin, NJ
Arrow Antenna www.arrowantennas.com	Arrow II 146/437-10WBP Hand-Held Portable Satellite Antenna	Michael Bryan KC3UKC Philadelphia, PA
Arrow Antenna www.arrowantennas.com	Arrow II 146/437-10WBP Hand-Held Portable Satellite Antenna	Steven Rabchuk KB2VKZ Pine Hill, NJ
Bioenno Power www.bioennopower.com	15Ah Lithium Iron Phosphate Battery BLF-1215A + BPC-1504DC Charger	John Gordon WA2RHJ Tabernacle, NJ
Bioenno Power www.bioennopower.com	15Ah Lithium Iron Phosphate Battery BLF-1215A + BPC-1504DC Charger	Manuel Taveras W3MTH Allentown, PA
Bioenno Power www.bioennopower.com	15Ah Lithium Iron Phosphate Battery BLF-1215A + BPC-1504DC Charger	George Robinson WA3LVR Downingtown, PA
Ron Block NR2B www.wrblock.com	Lightning Protection Book : A Comprehensive Guide For Amateur Radio	Gary Halbe N3EMY Ocean City, NJ
Craig “Buck” K4IA Books www.easywayhambooks.com	Easy Way Book Set 1 Pass Your Amateur Radio Technician Class Test Prepper Communication, The Easy Way	Farrell Silverman N3FS Baltimore, MD
Craig “Buck” K4IA Books www.easywayhambooks.com	Easy Way Book Set 2 Pass Your Amateur Radio General Class Test How To Get On HF, The Easy Way	Joseph Stratton W3JBS Westtown, PA
Craig “Buck” K4IA Books www.easywayhambooks.com	Easy Way Book Set 3 Pass Your Amateur Radio Amateur Extra Class Test How To Chase, Work, & Confirm DX	Jacqueline Blanch KD2JBY Manchester Township, NJ
Chris Prioli AD2CS www.AD2CS.com	CMS GCARC DLWM-01 Electronic Dummy Load / Wattmeter	Mary Delemarre W2TDS Galloway Township, NJ
Chris Prioli AD2CS www.AD2CS.com	CMS CCT-01 Coaxial Cable Tester	Robert Mathieson Jr KB2FDK Swedesboro, NJ
Elecraft : www.elecraft.com	DL1 20 Watt Dummy Load Kit	John Mazza WB2TMH Woodbury, NJ

2025 Hamfest Door Prize Winners

Company	Donation	Winner
Ham Radio Outlet www.hamradio.com	$50 Gift Certificate	Bruce Finley N3VET Frederica, DE
Ham Radio Outlet www.hamradio.com	$25 Gift Certificate	George Camizzi KE2ECW Cape May Court House, NJ
RT Systems www.rtsystemsinc.com	Gift Certificate	Astra Witty KD5PBQ Scotch Plains, NJ
Michael Resnick N2WOQ	Midland 18-2442 Magnetic Mount CB / Weather Antenna	Peter Greene N2LVI Marlton, NJ



From The Help Desk - February 2026

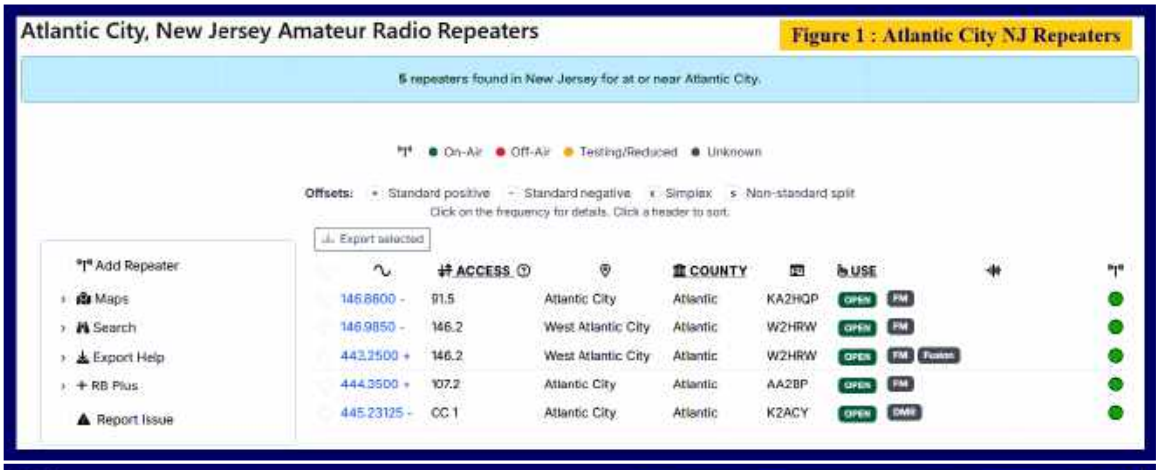
By Chris Prioli AD2CS - chris@ad2cs.com - www.ad2cs.com

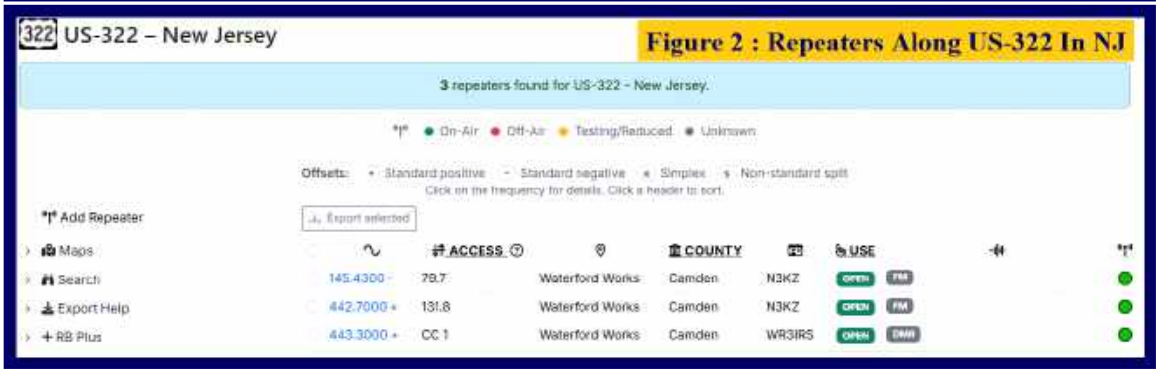
Note : This is an ongoing series of related articles that will each take a look at some facet of radio selection, installation, or operation as suggested by actual questions received from Club members or other amateur operators.

Q : If I want to program a mobile radio with the repeaters that would be available along a given route that I plan to use for a road trip, how would I go about doing this?

A : There are several sources available that provide information about amateur radio repeaters located within certain areas, including both print and online sources. However, depending upon the geographic area to be traveled and also depending upon the specific route(s) to be travelled, some extensive detective work may be required.

By far, the best resource for this information is ***RepeaterBook*** and by extension, **www.repeaterbook.com**. ***RepeaterBook*** is a print-format reference that lists radio repeaters in various geographic areas. The volume lists both amateur radio repeaters and GMRS repeaters, which makes it a simple matter to identify the location, frequency, call sign, offset, and access codes for a huge number of repeaters, worldwide. While there are many countries without repeaters listed, the vast majority of the so-called ***"civilized world"*** is covered and will have repeaters listed in this reference. The listed repeaters are arranged geographically, and then by frequency.





A very user-friendly adjunct to the print version of ***RepeaterBook*** is the online version of the reference. The primary segregation of listings is that of North America and then the ***"rest of the world"***. Within the North American repeater listings, specific location listings are broken down in several different ways. For example, it is possible, on a state-by-state basis, to search for repeaters based upon the bands on which they operate, the modes under which the repeaters operate, features supported by the repeaters, systems to which the repeaters may be linked, emergency services supported by the repeaters, highways nearby to the repeaters, the towns in which they are located or which are nearby the repeater's location, and the county in the repeater is located.

From The Help Desk - Continued on page 45

From The Help Desk - Continued from page 44

The illustration at **Figure 1** depicts an online listing for repeaters in the Atlantic City, NJ area, while **Figure 2** shows a listing of repeaters along US-322 in New Jersey.

The online version of ***RepeaterBook*** is found at **https://www.repeaterbook.com**.

The **www.repeaterbook.com** website offers the user the ability to set up a user account, and it also offers subscriptions to the latest news about the publication and the website. However, of much more value than a simple user account is the ***RepeaterBook Plus*** feature. This service is available at a subscription rate of $3.99 per month or for a flat $14.99 per year. Being a ***RepeaterBook Plus*** user gains you certain access, advertisement-free, to exportable and customizable searches that can be saved for future use.

The **www.repeaterbook.com** site offers extensive search and export capabilities, including exports in various formats for popular radios and programming software. For example, the user can perform a search along Interstate 80 on a state-by-state basis clear across the USA from one coast to the other, building a file that can be exported directly into ***CHIRP*** or the ***RT Systems*** programming application for upload directly to the radio. Suffice it to say that if I were to be planning a road trip, I would certainly use ***RepeaterBook*** as a part of the planning process. The online availability also makes the reference very portable, making it easy to rework a route if the plans should change somewhere along the way.

I should also point out that the ***RepeaterBook*** database is also accessible and searchable from within the ***CHIRP*** software, as are a few other databases of use for this purpose. Refer to **Figure 3**, where the ***Radio > Query Source*** command is shown. Note that six different search sources are available, all of which will bring the retrieved data into a ***CHIRP*** tab for easy copy-and-paste operations. I mention the copy-and-paste routine because that is what would need to be done to move the retrieved data into the tab for the radio being programmed - the retrieved data is brought into ***CHIRP*** in its own new tab.

I realize that this answer may barely scratch the surface in describing the available options for planning a route, but the ***RepeaterBook*** route is, by far, the most common method used. I hope that this response helps the reader to understand a little bit about what is out there as far as route planning options.

See you next month!

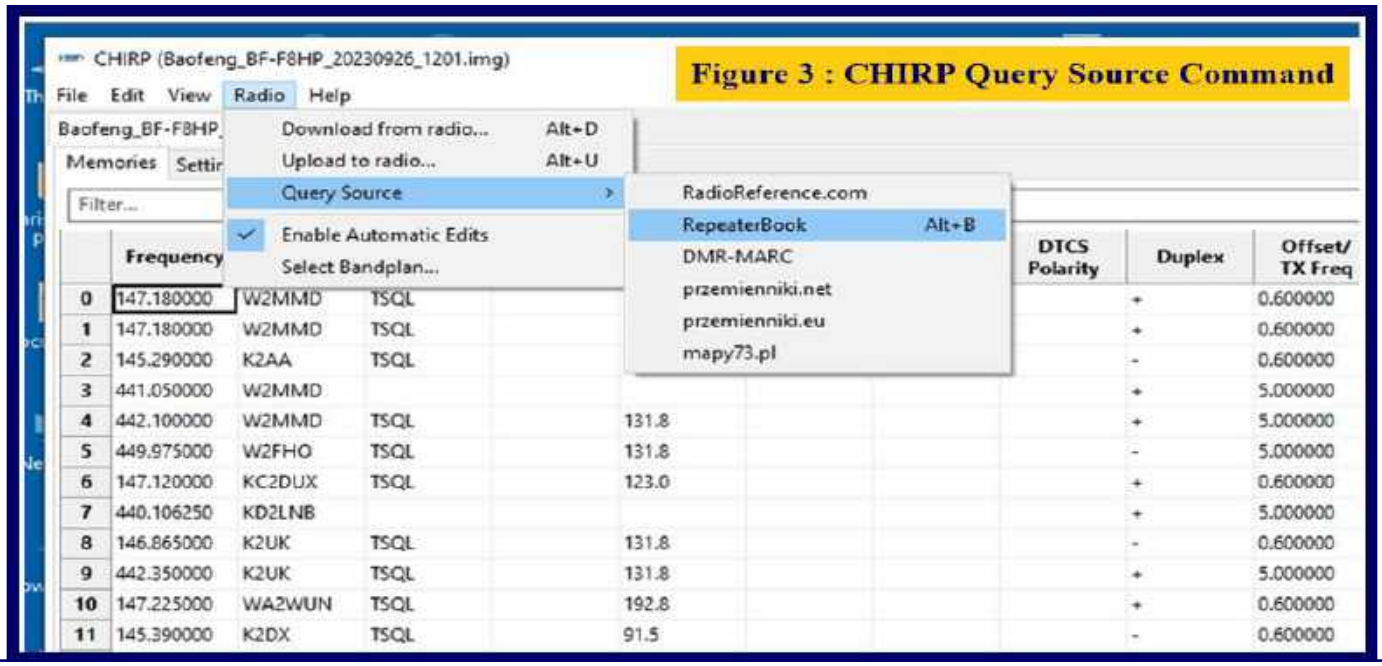


Figure 3 : CHIRP Query Source Command

Gloucester County Amateur Radio Club
General Membership Meeting Minutes
Wednesday, January 07, 2026

Meeting opened @ 1900 Hours by President Jonathan Pearce WB2MNF with the Pledge of Allegiance to the Flag

Attendance :

- **In-person : 39**
- **Zoom : 17**

Visitors :

- **Kevin Zembower KC3KZ, ZOOM**
- **Hadyn Cotton KC3AMM, ZOOM**

New Members :

- **Cole Bonner KE2GYA, Manahawkin, NJ**
- **Joe Fisher KC2TN, Atco, NJ**
- **Dean Marzocca N2TNN, Vineland, NJ**
- **Alexander Williams KE2HHX, Sewell, NJ**

Announcements :

- Winter Fox Hunt 1/11/26
- Winter Field Day 1/24-25/26

Upcoming Clubhouse Events :

- License Testing Thursday 1/8 @ 7PM
- Tech Saturday "SDR Intro" 1/10 @ 9AM
- Meshtastic Work Session Saturday 1/17 @ 9AM
- Board of Directors Meeting 1/21 @ 7PM
- Dinner at the Clubhouse 1/28 @ 6PM

Member Current Activities :

- **Karl Frank W2KBF** discussed his experiments with Meshcore and Meshtastic.
- **John Zaruba K2ZA** reported on his success with adding a spectrum display to his HF radio.

Business Meeting :

Minutes of December 2025 business meeting as published in Crosstalk were approved by voice vote of members present.

TREASURER'S REPORT :

- 2026 Year to Date Income and Expense
  - Income : $1,220.00
  - Expense : $196.48
  - Net : $1,024.62

January 2026 General Membership Meeting Minutes - Continued on page 47

January 2026 General Membership Meeting Minutes - Continued from page 46

Remarks : **John O'Connell K2QA** reported via Zoom.

GLOUCESTER COUNTY AMATEUR RADIO FOUNDATION :

- Report : **John O'Connell K2QA** discussed the account balances.

CLUBHOUSE REPORT :

- Report : **Al Arrison KB2AYU** discussed antenna installation issues along with re-installation of the 915 MHz Meshtastic node.

DX AND CONTESTS :

- Report : **Tony Starr K3TS** reported IN PERSON on upcoming contests, details in CrossTalk.

EDUCATION COMMITTEE :

- Report : **Jon Pearce WB2MNF** discussed Woodruff School STEM club activities.

NEW BUSINESS :

- Motion to approve the Treasurer's report passed by voice vote of members present.
- **John Zaruba K2ZA** discussed potential embroidered club merch with a local vendor.

PRESENTATION :

- "Setting Up a Modern HF Station" by **Kevin Zembower KC3KZ**

Meeting adjourned @ 2004 Hours

Respectfully submitted,
John Zaruba K2ZA,
Recording Secretary

New QRZ Award: USA250 (The 250th Anniversary of the United States of America)

In 2026, the United States of America will commemorate a historic milestone — the **250th anniversary of its founding.** To honor this once-in-a-lifetime event, QRZ is proud to introduce a special commemorative operating award: **USA 250**.

The **USA 250 Award** is available to amateur radio operators **worldwide** and is granted upon the successful confirmation of **250 two-way contacts with US-based amateur radio stations** made during the 2026 calendar year.

Award Requirements
To earn the USA 250 Award, operators must:

- Make **250 confirmed QSOs** with **US-based amateur radio stations** (operating from DXCC entities 291, 6, 110, 9, 103, 202 or 285)
- Contacts may be made on **any band** and **any mode,** Transmission may not make use of a relay, repeater or internet linking.
- Licensed operators in **any country** are eligible
- QSOs must take place **during the 2026 calendar year only**
- The operating window opens at **00:00 UTC on January 1, 2026**
- All contacts must be **confirmed on QRZ Logbook** (imported LoTW confirmations accepted)
- The official rules can be found here **https://www.qrz.com/page/qrz-operating-awards**

Operating Period
January 1, 2026 00:00:00 – December 31, 2026 23:59:59 (UTC)

Gloucester County Amateur Radio Club
Board of Directors Meeting Minutes
Wednesday, January 21, 2026

Meeting opened @ 1900 Hours by President Jonathan Pearce WB2MNF

Attendance :

- **President Jon Pearce WB2MNF : Present**
- **Vice President Ron Block NR2B : Present**
- **Treasurer John O'Connell K2QA : Present**
- **Recording Secretary John Zaruba Jr K2ZA : Present**
- **Corresponding Secretary Mike Resnick N2WOQ : Present**
- **Director (2024-2026) Al Arrison KB2AYU : Present**
- **Director (2024-2026) Bill Price NJ2S : Present**
- **Director (2025-2027) Jeffrey Garth WB2ZBN : Present**
- **Director (2025-2027) Frank Romeo N3PUU : Present**
- **Director (2026-2028) Chris Prioli AD2CS : Present**
- **Director (2026-2028) James Wright N2GXJ : Present**
- Trustee (2023-2026) Sheldon Parker K2MEN :
- **Trustee (2024-2027) Len Rust W2LJR : Present**
- **Trustee (2025-2028) Earl Moore KC2NCH : Present**
- **Trustee (2026-2029) Greg Ciraula K3GC : Present**

New Member Applications :

- **Haydn Cotton KC3AMM, Swedesboro, NJ**
- **Daniel Devlin KC2GYU, Seaville, NJ**
- **Anthony Vece W2AJV, Atco, NJ (Returning Member 1994)**

Treasurer's Report :

- **Income : $2,876.64**
- **Expense : $207.20**
- **Net : $2,669.44**

Detailed financial statements are available for member review upon request.

Committees :

- **Clubhouse : Al Arrison KB2AYU** discussed potential cold weather issues.
- **Programs : Jon Pearce WB2MNF** discussed recent Tech Saturday turn out.
- **Education : Jon Pearce WB2MNF** reported on the installation of antennas at the Woodruff School. **Chris Prioli AD2CS** reported license classes are now open for registrations.
- **Winter Field Day :** Due to forecast hazardous weather conditions, the Winter Field Day activities will be cancelled.
- **Membership :** Two previously approved applicants for membership removed due to non payment of dues.
- **Foxhunt Report : Jim Wright N2GXJ** discussed the latest fox hunt.

January 2026 Board of Directors Meeting Minutes - Continued on page 49

January 2026 Board of Directors Meeting Minutes - Continued from page 48

- **VE Team : Chris Prioli AD2CS** submitted a summary of the total number of new hams minted through the VE testing program since 2016.
- **Hamfest : Ron Block NR2B** discussed 4-H scheduling issues, at the moment October 11th appears to be viable.

Old Business :

- Motion to approve previous BoD minutes passed by voice vote of Club officers present.
- **Charlie Olinda N2SRQ** took care of fire extinguisher recertification.

New Business :

- Motion to approve new member applications passed by voice vote of Club officers present.
- Motion to approve the Treasurer's Report passed by voice vote of Club officers present.
- 2026 operating budget discussed, will be presented to the membership for approval.
- Discussed 250th Anniversary of the American Revolution On-Air Celebration activities, another planning meeting to be scheduled.
- Discussion of ARRL Club Affiliation and Special Service Club status and the value thereof. The sense of the Board is the Club derives value from the association, but joining ARRL is a personal decision for each Club member.
- Motion to re-schedule the Hamfest for October 11, 2026 approved by voice vote of Club officers present.
- **Club Nets :**
  - ♦ 40 meter frequency : 7.170 MHz (+/- 5 or 10 kHz) @ 1900 Hours
  - ♦ 2 meter nets :
    - ◊ December 2025
      - ⇒ Tuesday : Average 10.2 check ins
      - ⇒ Thursday : Average 6.6 check ins

Meeting adjourned @ 2047 Hours

Respectfully Submitted,
John Zaruba Jr K2ZA
Recording Secretary

ARRL is calling on all radio amateurs and GRMS licensees to join our nationwide grassroots campaign to pass the **Amateur Radio Emergency Preparedness Act**. ARRL has made it very easy to send your letters to Congress. Hams should go to **https://send-a-letter.org/HOA** and GMRS users should go to **https://send-a-letter.org/GMRS**. The letters will automatically be sent to your elected officials encouraging them to support the bipartisan bills. Passage would give amateur radio operators the same rights to install antennas on their property as those enjoyed by users of TV antennas, wireless internet, and flagpoles. Radio clubs should also prepare letters of support, signed by each club officer.

See instructions for clubs (PDF) and a sample letter for clubs (DOCX). For more information about the ARRL campaign to Pass The Bill, visit **www.arrl.org/HOA**. And please share these YouTube videos on your personal social media.

Article Credit : The ARRL Letter for November 6, 2025 - **www.arrl.org**

Volunteer Monitor Program Report - November 2025

The Volunteer Monitor (VM) Program is a joint initiative between ARRL and the FCC to enhance compliance in the Amateur Radio Service. This is the November 2025 activity report of the VM Program.

- Two Technician operators in Texas, and one each in California, Arkansas, and Florida, were issued advisories concerning 20-meter FT8 operation, a band on which Technicians have no privileges.
- Operators in North Carolina and Tennessee were issued advisories regarding improperly wide signals on 3.927 MHz. Section 97.307(a) of the Commission's rules states, "No amateur station transmission shall occupy more bandwidth than necessary for the information rate and emission type being transmitted, in accordance with good amateur practice."
- Operators in Washington, Oregon, and California were issued advisories regarding SSB operation on 7.299 MHz, too close to the band edge.
- An operator in Florida was issued an advisory for operation with an expired license.
- An operator in Maine was issued an advisory concerning his disregard for a directive from a local repeater owner to stop using the repeater. The FCC not only expects, but requires, repeater owners to maintain control of their repeaters, and will enforce such "stay off" letters.
- The FCC requested assistance in a public safety case near McAllen, Texas, and an unlicensed operation case in California. Information was provided to the FCC in both, but no action was taken due to the FCC closure.

The totals for October 2025 monitoring were 1,511 hours on HF frequencies, and 1,579 hours on VHF frequencies and above, for a total of 3,090 hours.

Thanks to Volunteer Monitor Program Administrator Riley Hollingsworth K4ZDH

Discovery Dish : Remote L-Band Weather Satellite Reception

The Club operates a KrakenRF Discovery Dish - a lightweight, 70 cm aluminum parabolic antenna optimized for L-band (around 1.69 GHz) reception of geostationary and polar-orbiting weather satellites. We have purchased all three available feed points, with the one tuned for GOES-19 frequencies currently installed. This setup uses an Airspy R2 SDR, selected for its excellent wide bandwidth and effective filtering, paired with the dish for superior performance in receiving high-resolution imagery and data from satellites like GOES HRIT, GK-2A, FengYun, NOAA HRPT, Metop, and Meteor M series.

More information about this dish can be found on the Skunkworks website at :

https://wp.w2mmd.org/wp/discovery-dish-remote-l-band-weather-satellite-reception

New 60-Meter Frequencies Available as of February 13, 2026

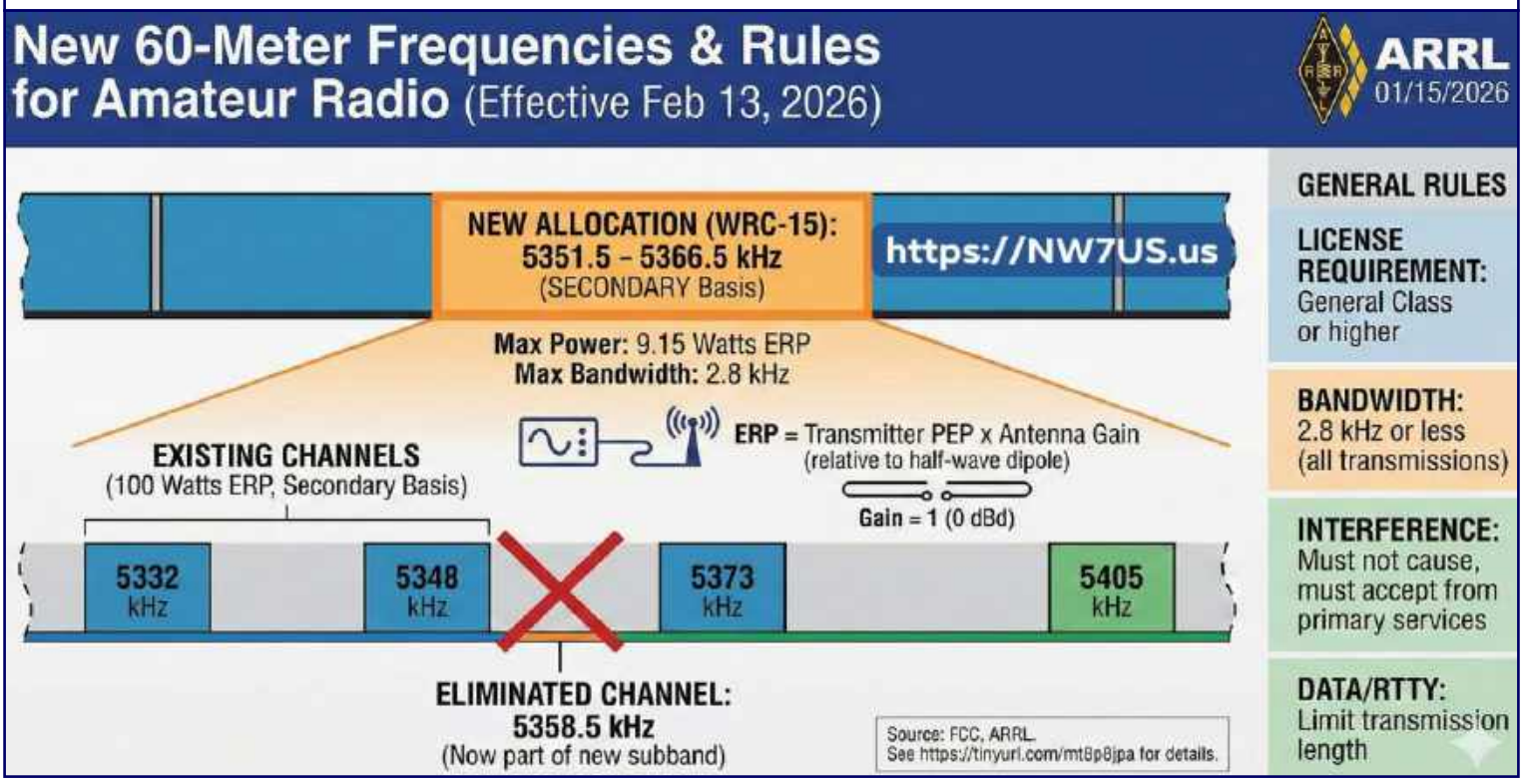
The new 60-meter frequencies approved by the FCC in December will become available to amateurs as of February 13, 2026, along with new power restrictions on those frequencies. It's a bit confusing, as different rules apply to different segments of the band. The changes result from the FCC's action to approve a worldwide 60-meter amateur allocation made by the World Radiocommunication Conference in 2015 (WRC-15). See **https://tinyurl.com/mt8p8jpa**.

As of February 13, FCC-licensed amateur operators holding General Class or higher licenses may operate on a secondary basis anywhere between 5351.5 and 5366.5 kHz, subject to a maximum bandwidth of 2.8 kHz and maximum transmit power of 9.15 watts ERP (effective radiated power). For the purpose of computing ERP, the transmitter PEP (peak envelope power) is multiplied by the antenna gain relative to a half-wave dipole antenna. A half-wave dipole is presumed to have a gain of 1 (0 dBd). Amateurs using other antennas must maintain in their station records either the antenna manufacturer's data on the antenna gain or calculations of the antenna gain.

Here's the confusing part: The existing 60-meter channels centered on 5332, 5348, 5373, and 5405 kHz remain as secondary amateur allocations with maximum power of 100 watts ERP. However, the old channel at 5358.5 kHz is eliminated as it is now part of the new 5351.5-5366.5 kHz subband and subject to the lower power limit.

For all 60-meter transmissions, emission bandwidth is limited to 2.8 kHz or less and amateurs must not cause harmful interference to, and must accept interference from, stations authorized by the United States (NTIA and FCC) and other nations in the fixed service; and all other nations in the mobile service (except aeronautical mobile). Data or RTTY emissions in particular must be limited in transmission length so as not to cause harmful interference. Digital mode operators must be familiar with offsets in order to stay within the authorized frequencies.

The new FCC rules take effect on February 13, which is 30 days after publication in the January 14 edition of the **Federal Register (https://bit.ly/4qrI8y7)**. See also **ARRL News (https://bit.ly/3LSaSRs)** for related background.



Join ARRL In Celebrating America's 250th - On The Air!

In 2026, ARRL is commemorating America's 250th birthday with a yearlong on-the-air celebration: the America250 Worked All States (WAS) Award. Running from January 1 through December 31, this special operating event challenges amateurs of all license classes to contact all 50 US states and confirm those QSOs via **ARRL's Logbook of The World (LoTW - https://lotw.arrl.org/lotwuser/default).** Modeled after the classic WAS Award, America250 WAS encourages activity across nearly every band - from LF through microwaves - and on CW, phone, and digital, culminating in a commemorative, frame-worthy WAS certificate.

Participants can pursue America250 WAS in many ways, with endorsements recognizing achievements by band, by mode, Triple Play (all three modes), by satellite, by contacting ARRL Affiliated Club Stations in all 50 states, and by contacting W1AW/portable in all 50 states. Throughout 2026, the iconic W1AW call sign will be "loaned" to stations nationwide, activating each state twice during the year. All confirmations are handled through LoTW, making it easy to track progress and apply for awards and endorsements.

ARRL members can read all the details in the **Jan/Feb 2026 (https://bit.ly/4pVX5Yk)** issue of On The Air magazine.

Operations begin 0000z on Wednesday, and end on 2359z Tuesday (7 days total for each activation). See the complete schedule at : **www.arrl.org/america250-was**.

Upcoming Tech Saturday Forums

March 07, 2026

April 04, 2026

** Digital Radio Deep Dive **

** Packet - WSJT Modes - FL-Digi Modes - Meshtastic **

NTS Resources

The National Traffic System® (NTS) is a network of Amateur Radio operators who move information during disasters and other emergencies. General messages offering well wishes also move through the NTS to help test the system and to help Amateur Radio operators build traffic handling skills. While the NTS is primarily set up to serve the United States and Canada, it is possible to move traffic internationally through the NTS through various local, regional, area, and international network connections.

- **NTS 2.0 : https://nts2.arrl.org**
- **NTS Manual : https://www.arrl.org/nts-manual**
- **NTS Methods and Practices Guidelines Table of Contents : https://www.arrl.org/table-of-contents-nts-methods-and-practices-guidelines**
- **Handling Instructions : https://nts2.arrl.org/hx-handling-instructions**
- **Numbered Texts : https://nts2.arrl.org/numbered-texts**
- **Form Encoding Rules for Form : https://nts2.arrl.org/form-encoding-rules-for-forms**

Future-Proofing ARES

Starlink Roam for Support of Deployments

Consider adding this compact, inexpensive satellite-broadband option to your go-kit.

Bob Famiglio, K3RF
ARRL Atlantic Division Director

As the nature of emergencies — and the technologies that support response efforts — continues to evolve, one way to keep up with the demands of public service and modern public safety support missions is by using Starlink, an exciting new option that can increase our usefulness as emergency communications volunteers.

A Tool for Rapid Deployment

Starlink offers a compact, inexpensive satellite-broadband option that allows a portable internet backhaul for rapid deployment of ARES® teams in the field. Starlink's Roam service plans are designed for on-the-go use and offer pay-as-you-go activation, Standby Mode for reduced billing when idle, and in-motion support that aligns with vehicle-mounted operations.

Roam provides a low-latency wide-area-network path that's suited to Winlink backhaul, National Traffic System traffic delivery, situational awareness maps, and Automatic Packet Reporting System-Internet Service bridging. Using Roam as an additional tool preserves amateur radio frequencies for tactical voice coordination while moving digital traffic (team logs, resource requests, and incident reports) off-net via a resilient internet path. To be clear, Roam is a supplement, not a replacement, for HF/VHF/UHF nets specifically for tactical voice operations.

The Starlink Mini Roam is built for portability with a 26 W max power draw. It's shipped with a 120 V ac adapter; however, 12 V dc adapters for battery use are also available. It has an integrated Wi-Fi router for quick on-scene networking.

Starlink Mini Roam Integration

The Mini Roam requires an unobstructed view of the sky. Size battery packs or mobile power stations to cover your expected mission durations.

Integrating Roam into ARES standard operating procedures is straightforward; it can be used wherever deployment would benefit by sending written traffic off amateur radio nets to outside of the affected disaster areas. A Starlink Mini Roam costs $299, with high-speed access (more than 200 Mb/s throughput) costing $50/month for up to 50 GB of data, which can be paused monthly. The Roam service allows for switching indefinitely to standby service for $5/month, but the service remains available at that price with speeds limited to about 500 Kb/s and with unlimited use. Tests have confirmed that such reduced speed is sufficient for hams to inject messages in radiogram- or IC-213-type formats. Even Wi-Fi voice calling with some cell carriers works very well and becomes an affordable satellite phone when access to the public switched telephone network outside the affected area is needed and cell service is disrupted, as is frequent in disasters.

In Summary

Starlink Mini Roam is a compact, field-friendly tool that materially extends ARES digital capabilities and usefulness to the public. Adding Roam to a go-kit increases our value, while keeping our on-air radios as the mission-critical primary layer.

The Starlink Mini Roam in Bob Famiglio's, K3RF, go-kit.

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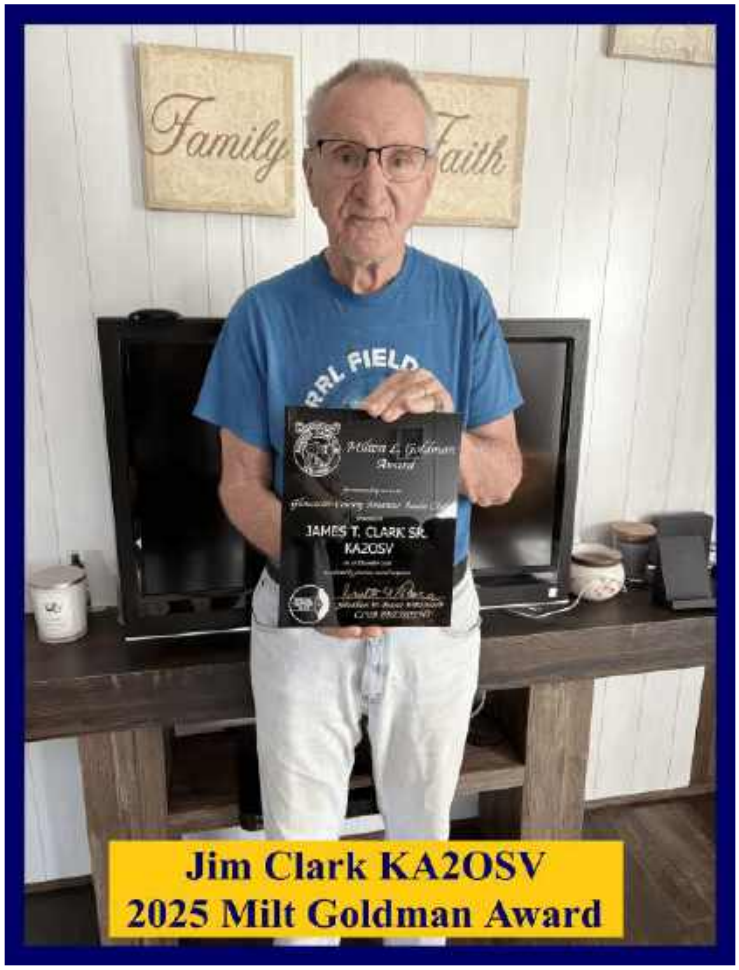
To Be Added To The DX HONOR ROLL or Update Your Number, Please Contact
Ernest Kraus KD2EAV
meanddelcanotc@verizon.net

Name/Callsign	DXCC
Bill Grim W0MHK	352
Dave Strout W2YC	349
Edward De Fonzo W2DE	339
Darrell Neron AB2E	337
Bob Pantazes W2ARP	300
Gary Castellini N2IEC	288
Vinnie Sallustio N4NYY	277
Sheldon Parker K2MEN	276
Jim Wright N2GXJ	276
John Hill W2HUV	271
Tony Starr K3TS	250
Kenny Denson WB2P	248
Dennis Sandole K2SE	231
Eric Morris N2BRJ	173
Art Strong KA0WS	165
Howard Marder WA2IBZ	160
Steve Farney W2SEF	149
Phil Nunzio WA3RGY	144
Ben Johnson NE2R	134
Rich Subers W2RHS	133
Bart Kleczynski AC2PT	124
Marc Federici WM2Y	117
Chuck Capasso WB2PGE	104
Harry Strahlendorf W3DNQ	103
Jim Clark KA2OSV	87
Updated As Of 01/20/2026	



Hmm...It's Saturday and you want to know if someone is at the Clubhouse? Why not call and find out!

W2MMD Clubhouse : 856-244-6914

February Birthdays

Congratulations To Our Members Who Are Celebrating A Birthday This Month

Chris Angelastro KE2DST
Mike Angelastro KE2DPQ
Kerri Caguiat K2CAG
Bob Castellini N2IEC
Todd Cecilio KA2YNT
Greg Ciraula K3GC
Troy Clancy AD2LY
Ed De Fonzo W2DE
Matt Duffield KE2ECE
Bob Erenburg KD3BGJ
Todd Foster W2TEF
Paul Jensen KC3LSU
Bob Kay KE2CEG
Dan Lenco WA2BPH
Jim McCullough KE2BEL
Vinnie Sallustio N4NYY
Neil Sternstein K2RCH
Bill Szkromiuk W4WCS
Mario Tagliaferri W3CGS
Ralph Verdi KC2WVM

In Memoriam : February Birthdays

Philip Bakanowsky WB2ONS
Barbara Bielecki N2SBP
Marla Bozarth N2DWR (President 1992, 1995)
Charles Colabrese WA2TML
Thomas Cusack KC2THO
Salvatore DiAmore WA2JCT
Milton Goldman K3WIL
(President 1963, Charter Member)
Robert Grimmer Sr KN2QWO
Richard Harkins N3RYO
Harry Lauer N3ISO
William Lewitt N2NLK
Harold Mathis NJ2C
Harry McCormick Sr WA2SEA
George Munns Jr KB2GW
Richard Munyan Sr W2RCM
Herbert Schuler K2HPV (President 1977)
William Uhland K4IDJ (Charter Member)
John Yeager Jr N2PKF
Alvin Zipkin KZ2N

CrossTalk Submissions

This is your Club Magazine. Make use of it.

If you have stories or photos of your hobby that you would like to share with the Club, please do so! We will keep covering all of the GCARC events, but it is also nice to get those personal perspectives to include in every issue. Connecting through experiences is what makes the Gloucester County Amateur Radio Club a *REAL* Club.

All submissions, queries, comments, and editorials should be addressed to :
Jeff Garth WB2ZBN at djgrath1 <*at*> gmail <*dot*> com

Submission deadline for the March 2026 issue : Friday, February 20, 2026

Club Website www.w2mmd.org
Club E-Mail Reflector : GCARC <*at*> Mailman <*dot*> QTH <*dot*> Net

Announced DX Operations : December 2025

www.ng3k.com/Misc/adxo.html

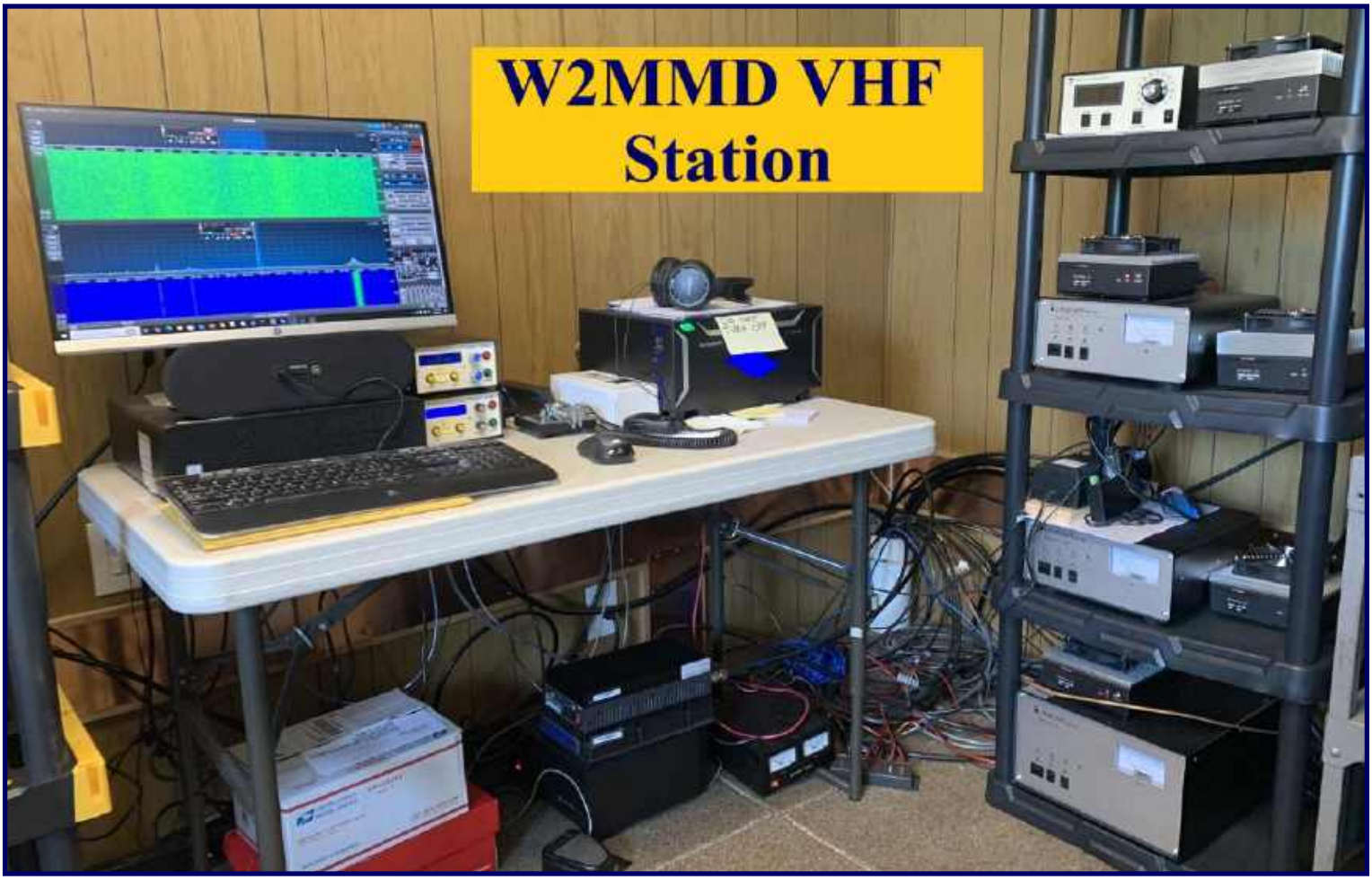
From The Shack of Bill Feidt NG3K : www.ng3k.com

2026 Jan12	2026 Feb10	**Desecheo I**	**KP5** [spots]	LoTW	DXW.Net 20251226	By NP4G and team as KP5/NP3VI fm FK68gj; 160-6m, incl 60m; CW SSB FT8; QSL via M0OXO; dates unclear/approximate
2026 Jan13	2026 Jan21	**Sint Maarten**	**PJ7** [spots]	LoTW	OPDX 20251022	By IZ2DPX as PJ7/IZ2DPX; also fm St Martin using FS/IZ2DPX /m; 60-6m; SSB FT4 FT8; 100w; vertical, dipoles; QSL via Club Log OQRS or IZ2DPX (B/d)
2026 Jan15	2026 Jan20	**French Polynesia**	**FO** [spots]	F6HCM (B/d)	OPDX 20260103	By F6HCM as FO/F6HCM fm Huahine I (IOTA OC-067); HF
2026 Jan15	2026 Feb01	**Indonesia**	**YB5** NEW [spots]	PB2X Direct	OPDX 20260114	By PB2X fm Western Sumatra; 80-10m; CW SSB FT8
2026 Jan15	2026 Feb23	**Guyana**	**8R1TM** NEW [spots]	LoTW	OPDX 20260114	By PY1SAD fm GJ06vs; 160-6m; CW SSB + digital; QSL via PY1SAD direct
2026 Jan15	2026 Feb28	**Kenya**	**5Z4** [spots]	LoTW	OPDX 20251223	By OZ6ABL as 5Z4/OZ6ABL fm Watamu (LI06ap); 80-6m; CW SSB FT8 FT4; holiday style operation; QSL via OZ6ABL or Club Log OQRS
2026 Jan17	2026 Feb17	**Tanzania**	**5H3DX** NEW [spots]	LoTW	OPDX 20260114	By NK8O fm Dodoma; 30-10m; CW SSB PSK31 FT8; QSL via Club Log OQRS or NK8O direct
2026 Jan18	2026 Jan24	**Maldives**	**8Q7JI**	LoTW	DXW.Net 20251105	By DS1TUW fm Dhaalu Atoll; 80-10m; CW FT8; QSL via Club Log OQRS or DS1TUW direct
2026 Jan18	2026 Jan30	**Barbados**	**8P9CB**	LoTW	OPDX 20251101	By WA7RAR fm Sea Cliff Cottage; 20-10m; SSB CW; QSL: Chris Billings, PO Box 1383, Shady Cove, Oregon, 97539, USA; SASE/green stamps NOT required
2026 Jan19	2026 Jan26	**Maldives**	**8Q7EL**	IW5ELA	DXW.Net 20251222	By IW5ELA fm Vaavu Atoll; HF; mainly CW; holiday style operation
2026 Jan20	2026 Jan27	**French Polynesia**	**FO**	F6HCM (B/d)	OPDX 20260103	By F6HCM as FO/F6HCM fm Raiatea I (IOTA OC-067); HF
2026 Jan20	2026 Feb10	**Guadeloupe**	**FG4KH**	LoTW	OPDX 20250915	By F1DUZ; 80-10m; SSB; QSL via F1DUZ (B/d)
2026 Jan22	2026 Jan28	**Micronesia**	**V6**	Club Log OQRS	DXW.Net 20250912	By JA1XGI as V6CU25 fm Chuuk I (IOTA OC-011,QJ57wj); 160-10m; CW SSB + digital; QRV for CQ 160m CW
2026 Jan22	2026 Feb08	**Rwanda**	**9X2AW** NEW	M0OXO OQRS	425DXN 20260116	By DF2WO fm Kigali; 160-6m; CW SSB FT8 FT4
2026 Jan22	2026 Mar31	**Curacao**	**PJ2**	LoTW	OPDX 20250908	By W2APF as PJ2/W2APF; 80-10m; CW SSB FT8; QSL via W2APF direct
2026 Jan27	2026 Feb01	**French Polynesia**	**FO**	F6HCM (B/d)	OPDX 20260103	By F6HCM as FO/F6HCM fm Maupiti I (IOTA OC-067); HF
2026 Jan30	2026 Feb03	**St Kitts & Nevis**	**V47JA**	LoTW	W5JON 20251207	By W5JON fm Calypso Bay; 160-6m; SSB FT8; yagi, verticals; QSL also OK via W5JON direct
February						
2026 Feb04	2026 Mar09	**St Kitts & Nevis**	**V4**	LoTW	K0YA 20260103	By K0YA as V4/K0YA and W5RCP as V4/W5RCP fm St Kitts; 160-6m; CW SSB FT8 FT4
2026 Feb05	2026 Feb20	**Sao Tome & Principe**	**S9BV**	Club Log OQRS	DXW.Net 20250912	By S53BV; 60 40 30 15m; CW SSB; holiday style operation
2026 Feb06	2026 Feb19	**Cape Verde Is**	**D4VR**	DDD0VR	DXW.Net 20251202	By DD0VR; HF; QRP; Feb 6-11 fm Boa Vista I (IOTA AF-005); Feb 11-19 fm Sao Tiago I (IOTA AF-086)
2026 Feb07	2026 Feb14	**Falkland Is**	**VP8TDX**	LoTW	DXW.Net 20251227	By NE8Z fm Port Stanley; 40-6m; CW SSB FT8 FT4; windom antenna; QSL via Club Log OQRS
2026 Feb10	2026 Feb17	**Greenland**	**OX7AKT**	LoTW	OZ7AKT 20251028	By OZ7AKT as fm Kangerlussuaq; 160-10m; SSB CW FT8
2026 Feb14	2026 Feb28	**Falkland Is**	**VP8TM**	LoTW	OPDX 20250816	By DC8TM fm IOTA SA-002; HF; SSB FT8; QSL via DC8TM (B/d)
2026 Feb15	2026 Mar14	**Bouvet I**	**3Y0K**	M0OXO	DXW.Net 20250815	By LA7GIA and team; begin and end dates subject to change; see Web for full QSL details
2026 Feb19	2026 Feb27	**Guyana**	**8R1WA** NEW	LoTW	OPDX 20260112	By IZ0EGA IZ0EVI IZ0EWJ IZ6DSQ; 160-6m; SSB FT8; QSL via IZ0EGA (B/d)
ARRL International DX Contest, CW (Feb 21-22, 2026) Check here for pericontest activity too.						
2026 Feb21	2026 Feb28	**Barbados**	**8P9XB**	VE2XB	OPDX 20251210	By VE2XB; 160-6m; holiday style operation
2026 Feb21	2026 Mar07	**St Kitts & Nevis**	**V4**	LoTW	DXW.Net 20251210	By WA7RAR as V4/WA7RAR fm St Kitts; 20-10m; SSB CW; QSL via WA7RAR direct

Also for your convenience, there is a direct link to NG3K on our website. Click on the NG3K DX Page.

Another FREE Clubhouse Resource Available To All Club Members

Training May Be Required : See Jon Pearce WB2MNF For Details



W2MMD

Facebook

Zenith IF Transformer Can Restoration - Part Two

By Chris Prioli AD2CS - chris@ad2cs.com - www.ad2cs.com

The mica disc is quite fragile and especially susceptible to cracking if flexed too far. In addition, the silver coating patch can also crack without an accompanying fracture of the underlying mica, which will effectively render the silver patch useless unless the contact paddle happens to fall directly on and thus can bridge the crack in the silver coating.

The best cleaning tools for the mica disc happen to be ***99.9% isopropanol (isopropyl alcohol or "IPA"),*** some cotton swabs, paper towels, and one of those ubiquitous pink pencil erasers. Begin by giving the disc a rinse with the IPA, and then blot it dry with a paper towel. Next, very carefully and gently scrub the upper surface of the mica disc with the pencil eraser. This will require several passes, with the eraser being cleaned back to a bright pink appearance between subsequent passes over the disc. Continue this process of scrubbing the disc and cleaning the eraser until all traces of carbon tracking and silver migration have been removed from the disc surface upon which you are working.

The next step is to thoroughly clean the ***just-erased*** surface with the IPA, removing any stubborn marks with an IPA-soaked cotton swab as necessary. Blot the disc dry with a paper towel. If the surface of the disc is acceptably clean, with no traces of carbon or silver migration remaining, flip the disc over and repeat the full process on the second surface. When properly completed, the disc will be completely transparent except at the locations of the silver patches, which will have clearly defined margins and absolutely no silver migration evident. If the disc is properly cleaned, it is ready for re-installation into the can internals.

Identify the upper surface of the mica disc by comparing the silver patch patterns on the two sides until you identify the one that matches the disc drawing that you made earlier. To install the mica disc, it must very carefully, so as not to damage it, be placed back into position between the contact paddles, with the mica disc upper surface facing towards the upper base disc and the tab aligned with the arrow witness mark on the base block. Once you have the disc positioned correctly, begin to slide the terminals back into their correct slots in the base block, working a little bit at a time on each terminal until the terminals are fully seated. Once you have fully seated the terminals in the base block, make sure that the center stud is completely inserted through the base parts, and then install the first tin nut onto the stud, tightening it securely with the nut driver.

Now take a good look at the assembled can internals, and then compare what you see to the photographs that you took earlier. Is each and every paddle in its correct position and located on its correct side of the mica disc? Are all of the winding wires still attached to their terminals? Is every terminal in its correct terminal position slot in the base block? Are the resistances as originally measured? If all of these questions can truthfully be answered ***"yes",*** then the can internals are assembled properly and continuation with the assembly is the next step. However, if it turns out that any one of those questions gets a negative response, the problem noted must be corrected before moving forward. That would, of course, require at least partial disassembly of the can internals again to correct the issue. Be patient and take your time doing this so as to avoid damaging anything. Work at it until the assembled can internals match the photographs and notes properly.

Once you have the internals ready to move forward, it is time to install the internals back into the enclosure. This is actually quite simple. Start by holding the internals by a terminal with one hand, and with the arrow witness mark at the top and towards you. In your other hand, hold the can enclosure with the drawn arrow at the top and towards you, and the open end towards the internals. Gently slide the internals into the can, and then turn the can - still holding onto one of the terminals - so that you can look into the hole in the top end of the enclosure. While looking into that hole, guide the internals into the can, adjusting the angle of the internals to bring the central tube into alignment with the hole in the can top.

Zenith IF Transformer Can Restoration - Continued on page 59

Zenith IF Transformer Can Restoration - Continued from page 58

When the central tube aligns, push the internals in so that the central tube seats in the hole and the base block seats in the can's open end. Verify that the arrow witness mark is aligned with the drawn arrow on the can corner. If they are aligned, you can continue with the assembly. If they are not aligned, slip the internals out just enough to rotate the parts to align the marks, and then re-seat the internals, once again guiding the central tube into the hole in the can top. If the assembly is correctly aligned, continue by re-forming the indents that secure the can enclosure to the can base. This is best done by simply placing the round shank of a small screwdriver against the indent strip and then bending that strip towards the can center by pushing sideways on the screwdriver shank. Repeat for all four indent locations. The IF can is now repaired and ready for installation back into the radio chassis.

Figure 11 : Discrete Radial Dipped Silver-Mica Capacitors

OK - so let's talk about repair option two - the idea of replacing the mica disc with discrete radial dipped silver-mica capacitors **(Figure 11).** Up to the point where the mica disc is removed from the can internals, the procedure is identical to the first method. However, an important aspect of this repair, something that we were not really concerned with during the cleaning process, is the design capacitance of each of the capacitors that are formed within the cans by the contact paddles, the mica disc, and the silver patches. We did not really care about specific values before because the same disc, providing the same capacitance values, was going back into the can. Now however, we are eliminating the disc completely, so we ***must*** have some idea of the capacitances provided by the disc.

Refer to **Table 1** for information about the design capacitances of the common Zenith IF cans that were used during the middle 1950's and up into the 1970's on some chassis. Note that this table shows only those terminals to which capacitors are connected.

IF Can #	Typical Function	Capacitor 1	Capacitor 2	Capacitor 3	Capacitor 4
95-1102	3rd AM IF	T1-T8 – 120pF	T6-T7 – 120pF	T3-T4/T6 – 180pF	
95-1150	1st, 3rd FM IF	T5-T8 – 24pF	T2-T4 – 24pF		
95-1153	FM Discriminator	T2-T3/T1/T6 – 24pF	T1/T3/T6-T7 – 68pF	T1/T3/T6-T8 – 68pF	T4-T5 – 24p
95-1250	1st AM IF	T4/T6-T7 – 120 pF	T3-T6 – 180pF	T1-T8 – 120pF	
95-1251	2nd AM/FM IF	T5-T8 – 50pF	T4-T5 – 68pF		
95-1920	FM Ratio Detector	T3-T4 – 43pF			

Table 1 : Zenith IF Can Capacitor Values

Simply for purposes of familiarity and comparison, we will explore re-capping the Zenith 95-1102 3rd AM IF transformer can in this section of the article, which is the same IF can that we worked with earlier. The term ***"re-capping"*** as used herein refers to the process of replacing existing capacitors with new ones. In this case, there will be three capacitors installed, two of which are of 120pF capacitance, while the third one is of 180pF capacitance. These should be familiar values, as these were the values afforded by the disc that we cleaned up in an earlier part of this article.

As has already been mentioned, the mica disc will be removed from the can internals and not re-installed. This leaves us with an untenable situation, in that the contact paddles that formerly were separated by the mica disc are now going to be able to come into direct contact with each other, creating a short-circuit at each terminal pair involved. This cannot be allowed to happen, so we must find an acceptable means of prevention of these short-circuits. There a few options from which to choose :

- **Removal of the contact paddles from the terminal assemblies**
- **Covering the contact paddles with insulating material such as electrical tape**

Zenith IF Transformer Can Restoration - Continued on page 60

Zenith IF Transformer Can Restoration - Continued from page 59

- **Covering both surfaces of the mica disc with an insulating layer**
- **Installing a new blank mica disc between the contact pads**

Let's explore each of these methods, one at a time, and think about the pros and cons of each method.

Starting with the removal of the contact paddles, we have here the most permanent method of the four. This method involves using a pair of end-cutting pliers to simply snip off the paddle-shaped contact pad from the terminal, leaving sufficient material in the plane of the paddle to permit gripping of the terminal by the upper base disc, so that the terminal will be held solidly on place. The pros include the fact that this is a positive method of preventing contact between the paddles, as the paddles will no longer exist. It is an easily implemented method. The cons include the fact that there is no going back once the contact paddles are removed. We are committed to the current course of action.

Next, we have the method of applying an insulating coating to each of the contact paddles. There are several products that can be used for this purpose, including standard black electrical tape, Kapton tape, liquid brush-on solder mask, and so forth. This method is a bit more labor-intensive than the first method discussed, which is one of the cons. Additional cons include the potential for insulation breakdown resulting in subsequent short-circuits, the possibility of the coating coming off the contact paddles, and the fact that the coating must be applied to both of the contact paddles in a terminal pair. Falling into the pros list is the fact that this method is clearly reversible, so we could, if necessary, go back to the original design, provided that a suitable silver-mica disc is on-hand to be installed.

Next is the option of covering both surfaces of the mica disc with an insulating layer. Perhaps the best material for this task is Kapton tape. Ideally, we should use tape that is wide enough to cover the entire disc in a single pass. Be sure to clean the disc with IPA before applying the tape to help the tape to adhere properly. Among the pros of this method is its ease, its reversibility, and its effectiveness. The cons, however, include such points as the possibility of the tape lifting from the disc surface, the need to trim the tape exactly to the disc contours, and the need to make a hole in the center of the tape coatings without damaging the mica disc.

That brings us to the final method, the installation of a blank mica disc in place of the original silver-mica disc. This method has a certain simplicity, and with mica discs readily available online, it is rather easily deployed. Among the pros is the ease of installation, the ability to reverse the process if necessary, and the effectiveness of the mica disc as an insulator. The cons for this method include the propensity for carbon tracks to form on the mica disc, leading to unstable device operation, and the cost and lead time on obtaining the necessary mica discs.

There is another drawback to both the second, third, and the fourth methods that has not yet been considered. The placement of an insulating layer between the contact paddles actually forms a capacitor of some unknown value at each of these terminal pair locations. That is probably best avoided. As a result, my method of choice is the removal of the contact paddles from the terminals.

In the task description that follows, it is assumed that the instruction provided earlier regarding the preparations for disassembly of the IF can have been accurately and completely followed, and that an adequate quantity of clear and illustrative photographs have been taken of the can internals. It is further assumed that a terminal diagram has been made and annotated, that the terminal resistances have been recorded in a table such as that shown at **Figure 6**, and that a terminal configuration table such as that in **Figure 9** has also been made accurately. All of this is necessary to ensure proper positioning and orientation of the terminals during reassembly of the can.

Zenith IF Transformer Can Restoration - Continued on page 61

Zenith IF Transformer Can Restoration - Continued from page 60

It will also be ***very*** helpful to be able to identify each of the terminals as to its terminal slot position before or as the terminals are removed, which we will be doing shortly. One method that works is to take a ***Sharpie®*** marker with a very fine tip and make a hash mark series on each terminal that relates to that terminal's slot position. For example, on terminal 1, make one single hash mark, while on terminal 4, there would be four hash marks made on the terminal, and so forth through all of the existing terminals. Make sure that whatever method you use, the terminals are clearly marked.

One marking method that works very well and is not at all ambiguous is to take a short length - an inch or so long - of solid hook-up wire, like 22AWG or 24AWG wire, in a light color, say yellow or white, and use that length of wire as a marker tag. Strip off the insulation from about 3/8" at one end of the wire, and on the wire insulation, make the appropriate number of hash marks for the wire position on the can base block. Make one such wire tag for each terminal that the can uses. Then, immediately after the terminal is removed from the can base block, the stripped end of the wire is to be inserted through the hole in the terminal end and then twisted to keep it in place. This tag will remain on the terminal right up to the point where the terminal is about to be re-inserted into the can base block.

When you are ready to begin, and have your wire markers made and ready to use, begin by carefully removing each terminal that has a contact paddle from the can base block one at a time, installing the proper marker tag (based on the terminal's slot position) to each terminal as soon as it is slid out of the can base block. Terminals without contact paddles may be cemented into place in the base block, and are best left in place there. Such terminals may have wires attached, though, so care must be taken not to break any such wire connections. The cemented terminals are not secured by the upper base disc, but instead are held in place purely by the cement.

Once the terminals have been removed, each contact paddle can be cut off the terminal using a pair of end-cutting pliers. The ***"before"*** and ***"after"*** representations of the trimmed terminals can be seen in **Figure 12**. Note that the contact paddle could actually be ***"flagged"*** in either direction, depending on whether the contact paddle was below or above the mica disc in its original placement. Once the terminals have had their contact paddles removed, the terminals are ready for re-insertion into the can base block.

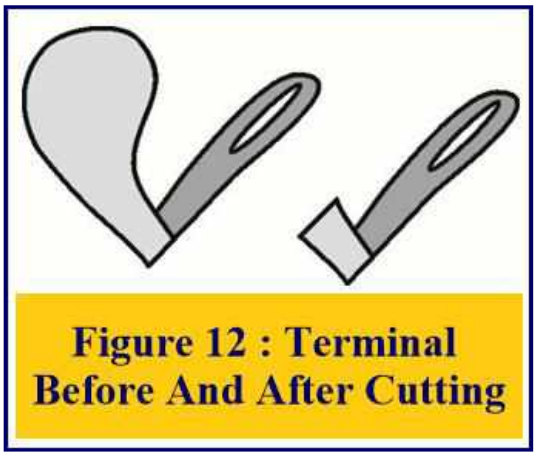


Figure 12 : Terminal Before And After Cutting

After insertion back into the can base block, it is important to recognize that ***all*** of the terminals are then to be captured flat on the can base block by the upper base disc, with everything held together by the nut installed onto the center stud and secured tightly against the can base block. One by one, remove the wire marker tag from a terminal and then insert that terminal into the appropriate terminal slot position, based on the legend on the tag. Once all of the terminals have been inserted, slide the can base block down to capture the terminals in place against the upper base disc, and install and tighten the nut to keep it all together.

Once the can internals are reassembled and the nut is secure, compare the assembled can internals to the photographs, notes, and drawings that you made earlier. If it is all correct, you can move on to the next step. However, if anything it out of place, the can internals must be at least partially disassembled so as to correct the discrepancy, and then must be secured together again. Following a final check of the internals, we will move on to the next step, which is the installation of the discrete capacitors.

Zenith IF Transformer Can Restoration - Continued on page 62

Figure 13 : Discrete Capacitors Installed

Hopefully, before this whole job began, the time was taken to identify and source the various values of discrete radial dipped silver-mica capacitors would be needed, and in what quantities.

Still using the 95-1102 IF can as our working example, we will need two 120pF capacitors and one 180pF device. The 120pF capacitors will be installed between terminals 1 and 8 and between terminals 6 and 7, respectively. The 180pF capacitor will be installed between terminals 3 and 4, with the lead that attaches to terminal 4 also continuing around to terminal 6. This is because the terminal 4-to-terminal 6 bridge connection that was originally made by the silver patch on the mica disc must be recreated, and this is one way of doing that. If, for some reason, the capacitor lead is not long enough to make that connection, a length of 24AWG hook-up wire can be used in place of the capacitor lead.

Occasionally, it may be necessary or desirable to use a pair of capacitors in parallel to achieve the desired total capacitance for a given location. The illustration of the 95-1102 can internals with the discrete capacitors installed at **Figure 13** is a good example of this. In this situation, a 68pF and a 51pF capacitor are installed in parallel at each of the 120pF locations, between terminals 1 and 8 and between terminals 6 and 7. Once the capacitors have been placed, they must be soldered into place at each involved terminal, and the excess lead length must be clipped short. When placing the capacitors, care must be taken once again to avoid damaging the ultra-fine coil winding wires that also connect to the terminals. In addition, care must be taken to ensure that the capacitors and their leads are inboard of the edge of the can base block, so that the enclosure will fit back in place and also so that no capacitor leads will come into contact with the can enclosure.

Figure 14 : IF Can Bottom View

Figure 15 : IF Can Top View

Installing the internals back into the can enclosure is the same as was described previously. Start by holding the internals by a terminal with one hand, and with the arrow witness mark at the top and towards you. In your other hand, hold the can enclosure with the drawn arrow at the top and towards you, and the open end towards the internals. Gently slide the internals into the can, and then turn the can - still holding onto one of the terminals - so that you can look into the hole in the top end of the enclosure. While looking into that hole, guide the internals into the can, adjusting the angle of the internals to bring the central tube into alignment with the hole in the can top. When the central tube aligns, push the internals in so that the central tube seats in the hole and the base block seats in the can's open end **(Figure 14).** Verify that the arrow witness mark is aligned with the drawn arrow on the can corner. If they are aligned, you can continue with the assembly. If they are not aligned, slip the internals out just enough to rotate the parts to align the marks, and then re-seat the internals, once again guiding the central tube into the hole in the can top. If the assembly is correctly aligned, continue by re-forming the indents that secure the can enclosure to the can base. This is best done by simply placing the round shank of a small screwdriver against the indent strip and then bending that strip towards the can center by pushing sideways on the screwdriver shank. Repeat for all four indent locations **(Figure 15).** The IF can is now repaired and ready for installation back into the radio chassis.

Zenith IF Transformer Can Restoration - Continued on page 63

Zenith IF Transformer Can Restoration - Continued from page 62

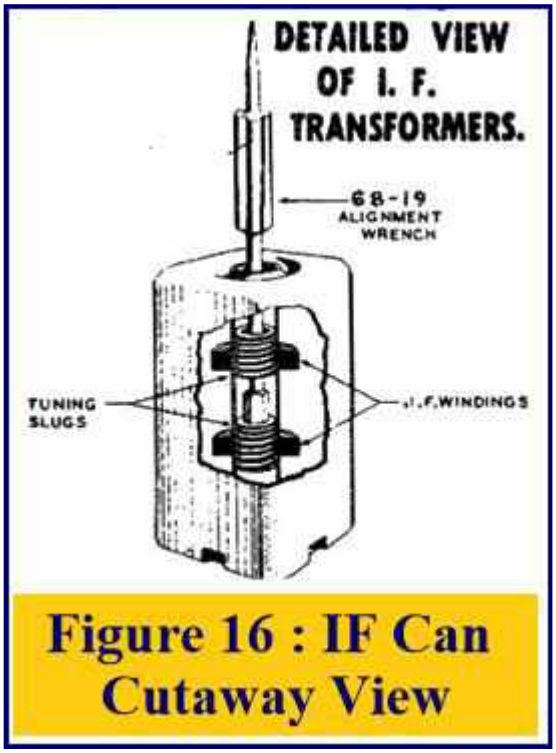


Figure 16 : IF Can Cutaway View

Install the IF can by first aligning the index mark drawn earlier with its mating mark on the chassis, and then seat the can on the four corner lips that are formed on the chassis. Drop the bridge onto the center stud, engaging its two side tips into the provided holes in the chassis. Install the nut onto the center stud, securing it using the nut driver. Finally, reconnect all of the external connections to the IF can's terminals, physically attaching them and then soldering them properly.

To round things out here, we will spend a few minutes going back over the IF can adjustment method. Refer to **Figure 16** as you follow along with this description. Inside the IF can, as you are now well aware, there are two windings installed at separate positions along the length of a central tube, and all held in place normally with wax. Inside the tube, with a space in between them, are two ferrite or pressed powdered iron tuning slugs, which are externally-threaded forms with a hex opening that extends longitudinally through each slug. As each slug passes through the center of its associated winding, it changes the magnetic condition of the winding. Because the two windings share a common center axis, their magnetic fields overlap and interact, permitting the two coils to operate as a transformer and therefore pass a signal magnetically from one winding to the other. The specific adjustment of the slugs within the coils peaks the magnetic fields, thus increasing the magnetic coupling between the windings.

Adjustment, as was already explained, is accomplished through the use of an alignment tool that has a hexagonal tip connected to the tool handle by a narrow-diameter shank. The hex is sized to fit inside the hexagonal openings of the slugs, while the shank is sized to be able to rotate freely when inside a slug. Thus, by inserting the tool just enough to engage the upper slug, the top winding can be peaked, and then by inserting the tool more deeply, passing it through the upper slug and inserting its hex tip into the lower slug, the lower coil can be peaked without changing the adjustment of the upper winding.

However, the adjustment of each winding's slug will affect the peaking of the opposite winding, so the alternating adjustments must be made repeatedly until no further improvement can be realized.

Restoration of the mid-1950's Zenith IF transformers is a tedious process, but it is one that pays huge benefits in radio performance when properly accomplished. Take your time, and be careful not to damage any of the coil windings as you work. Make good notes that will allow you to properly assemble the cans as you restore them. Select the restoration method that will give you the most desirable results. If complete originality is important or desired, then disc cleaning may be the route that you choose. However, if permanence of the restoration is your goal, then capacitor replacement is the better choice. Only you - or the customer - can make that decision effectively, and the customer does not always know what is best.

February 2026 Contest Calendar - WA7BNM Contest Calendar : www.contestcalendar.com

North American SSB Sprint Contest	0000Z-0400Z, Feb 1
Marconi Club ARI Loano Slow CW QSO Party	1300Z-2300Z, Feb 1
Real Time Contest	1600Z-1900Z, Feb 1
K1USN Slow Speed Test	0000Z-0100Z, Feb 2
ICWC Medium Speed Test	1300Z-1400Z, Feb 2
OK1WC Memorial (MWC)	1630Z-1729Z, Feb 2
ICWC Medium Speed Test	1900Z-2000Z, Feb 2
RSGB 80m Club Championship, SSB	2000Z-2130Z, Feb 2
ARS Spartan Sprint	0100Z-0300Z, Feb 3
Worldwide Sideband Activity Contest	0100Z-0159Z, Feb 3
ICWC Medium Speed Test	0300Z-0400Z, Feb 3
QRP Fox Hunt	0200Z-0330Z, Feb 4
Phone Weekly Test	0230Z-0300Z, Feb 4
A1Club AWT	1145Z-1300Z, Feb 4
CWops Test (CWT)	1300Z-1400Z, Feb 4
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Feb 4
Mini-Test 40	1700Z-1759Z, Feb 4
Mini-Test 80	1800Z-1859Z, Feb 4
CWops Test (CWT)	1900Z-2000Z, Feb 4
UKEICC 80m Contest	2000Z-2100Z, Feb 4
Walk for the Bacon QRP Contest	0000Z-0100Z, Feb 5 and 0200Z-0300Z, Feb 6
CWops Test (CWT)	0300Z-0400Z, Feb 5
CWops Test (CWT)	0700Z-0800Z, Feb 5
NRAU 10m Activity Contest	1800Z-1900Z, Feb 5 (CW) and 1900Z-2000Z, Feb 5 (SSB) and 2000Z-2100Z, Feb 5 (FM) and 2100Z-2200Z, Feb 5 (Dig)
SKCC Sprint Europe	2000Z-2200Z, Feb 5
NCCC FT4 Sprint	0100Z-0130Z, Feb 6
Weekly RTTY Test	0145Z-0215Z, Feb 6
QRP Fox Hunt	0200Z-0330Z, Feb 6
NCCC Sprint Ladder	0230Z-0300Z, Feb 6
K1USN Slow Speed Test	2000Z-2100Z, Feb 6
Vermont QSO Party	0000Z, Feb 7 to 2400Z, Feb 8
LABRE-RS Digi Contest	0000Z, Feb 7 to 2059Z, Feb 8
10-10 Int. Winter Contest, SSB	0001Z, Feb 7 to 2359Z, Feb 8
Mexico RTTY International Contest	1200Z, Feb 7 to 2359Z, Feb 8
F9AA Cup, CW	1200Z, Feb 7 to 1200Z, Feb 8
European Union DX Contest	1200Z, Feb 7 to 1200Z, Feb 8
Minnesota QSO Party	1400Z-2400Z, Feb 7
FYBO Winter QRP Sprint	1400Z-2400Z, Feb 7
AGCW Straight Key Party	1600Z-1900Z, Feb 7
British Columbia QSO Party	1600Z, Feb 7 to 0359Z, Feb 8 and 1600Z-2359Z, Feb 8
North American Sprint, CW	0000Z-0359Z, Feb 8
K1USN Slow Speed Test	0000Z-0100Z, Feb 9
4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Feb 9
ARRL School Club Roundup	1300Z, Feb 9 to 2359Z, Feb 13
ICWC Medium Speed Test	1300Z-1400Z, Feb 9
OK1WC Memorial (MWC)	1630Z-1729Z, Feb 9
ICWC Medium Speed Test	1900Z-2000Z, Feb 9
Worldwide Sideband Activity Contest	0100Z-0159Z, Feb 10
ICWC Medium Speed Test	0300Z-0400Z, Feb 10
DARC FT4 Contest	1900Z-2029Z, Feb 10
NAQCC CW Sprint	0130Z-0330Z, Feb 11
QRP Fox Hunt	0200Z-0330Z, Feb 11
Phone Weekly Test	0230Z-0300Z, Feb 11
A1Club AWT	1145Z-1300Z, Feb 11
CWops Test (CWT)	1300Z-1400Z, Feb 11
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Feb 11
Mini-Test 40	1700Z-1759Z, Feb 11
Mini-Test 80	1800Z-1859Z, Feb 11
CWops Test (CWT)	1900Z-2000Z, Feb 11
RSGB 80m Club Championship, Data	2000Z-2130Z, Feb 11
CWops Test (CWT)	0300Z-0400Z, Feb 12
CWops Test (CWT)	0700Z-0800Z, Feb 12
YLRL YL-OM Contest	0000Z, Feb 13 to 2359Z, Feb 14
NCCC FT4 Sprint	0100Z-0130Z, Feb 13
Weekly RTTY Test	0145Z-0215Z, Feb 13
QRP Fox Hunt	0200Z-0330Z, Feb 13
NCCC Sprint	0230Z-0300Z, Feb 13
K1USN Slow Speed Test	2000Z-2100Z, Feb 13
CQ WW RTTY WPX Contest	0000Z, Feb 14 to 2359Z, Feb 15
PODXS 070 Club Valentine Sprint	0000Z-2359Z, Feb 14
Asia-Pacific Spring Sprint, CW	1100Z-1300Z, Feb 14

February 2026 Contest Calendar - Continued on page 65

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SKCC Weekend Sprintathon	1200Z, Feb 14 to 2400Z, Feb 15
KCJ Topband Contest	1200Z, Feb 14 to 1200Z, Feb 15
Dutch PACC Contest	1200Z, Feb 14 to 1200Z, Feb 15
Russian PSK WW Contest	1200Z, Feb 14 to 1159Z, Feb 15
OMISS QSO Party	1500Z, Feb 14 to 1500Z, Feb 15
RSGB 1.8 MHz Contest	2000Z-2300Z, Feb 14
Balkan HF Contest	1300Z-1700Z, Feb 15
Run for the Bacon QRP Contest	2300Z, Feb 15 to 0100Z, Feb 16
K1USN Slow Speed Test	0000Z-0100Z, Feb 16
ICWC Medium Speed Test	1300Z-1400Z, Feb 16
OK1WC Memorial (MWC)	1630Z-1729Z, Feb 16
ICWC Medium Speed Test	1900Z-2000Z, Feb 16
Worldwide Sideband Activity Contest	0100Z-0159Z, Feb 17
ICWC Medium Speed Test	0300Z-0400Z, Feb 17
QRP Fox Hunt	0200Z-0330Z, Feb 18
Phone Weekly Test	0230Z-0300Z, Feb 18
A1Club AWT	1145Z-1300Z, Feb 18
CWops Test (CWT)	1300Z-1400Z, Feb 18
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Feb 18
Mini-Test 40	1700Z-1759Z, Feb 18
Mini-Test 80	1800Z-1859Z, Feb 18
AGCW Semi-Automatic Key Evening	1900Z-2030Z, Feb 18
CWops Test (CWT)	1900Z-2000Z, Feb 18
Walk for the Bacon QRP Contest	0000Z-0100Z, Feb 19 and 0200Z-0300Z, Feb 20
CWops Test (CWT)	0300Z-0400Z, Feb 19
CWops Test (CWT)	0700Z-0800Z, Feb 19
NTC QSO Party	1900Z-2000Z, Feb 19
NCCC FT4 Sprint	0100Z-0130Z, Feb 20
Weekly RTTY Test	0145Z-0215Z, Feb 20
QRP Fox Hunt	0200Z-0330Z, Feb 20
NCCC Sprint	0230Z-0300Z, Feb 20
K1USN Slow Speed Test	2000Z-2100Z, Feb 20
ARRL Inter. DX Contest, CW	0000Z, Feb 21 to 2400Z, Feb 22
REF Contest, SSB	0600Z, Feb 21 to 1800Z, Feb 22
Feld Hell Sprint	1900Z-2059Z, Feb 21
World Wide Argentina DX Contest	0000Z-2359Z, Feb 22
High Speed Club CW Contest	1400Z-1700Z, Feb 22
Classic Exchange, Phone	1400Z, Feb 22 to 0800Z, Feb 23 and 1400Z, Feb 24 to 0800Z, Feb 25
Classic Exchange, Phone	1400Z, Feb 22 to 0800Z, Feb 23 and 1400Z, Feb 24 to 0800Z, Feb 25
K1USN Slow Speed Test	0000Z-0100Z, Feb 23
QCX Challenge	1300Z-1400Z, Feb 23
ICWC Medium Speed Test	1300Z-1400Z, Feb 23
OK1WC Memorial (MWC)	1630Z-1729Z, Feb 23
QCX Challenge	1900Z-2000Z, Feb 23
ICWC Medium Speed Test	1900Z-2000Z, Feb 23
RSGB FT4 Contest	2000Z-2200Z, Feb 23
Worldwide Sideband Activity Contest	0100Z-0159Z, Feb 24
QCX Challenge	0300Z-0400Z, Feb 24
ICWC Medium Speed Test	0300Z-0400Z, Feb 24
SKCC Sprint	0000Z-0200Z, Feb 25
QRP Fox Hunt	0200Z-0330Z, Feb 25
Phone Weekly Test	0230Z-0300Z, Feb 25
A1Club AWT	1145Z-1300Z, Feb 25
CWops Test (CWT)	1300Z-1400Z, Feb 25
Mini-Test 40	1700Z-1759Z, Feb 25
Mini-Test 80	1800Z-1859Z, Feb 25
CWops Test (CWT)	1900Z-2000Z, Feb 25
UKEICC 80m Contest	2000Z-2100Z, Feb 25
CWops Test (CWT)	0300Z-0400Z, Feb 26
CWops Test (CWT)	0700Z-0800Z, Feb 26
RSGB 80m Club Championship, CW	2000Z-2130Z, Feb 26
NCCC FT4 Sprint	0100Z-0130Z, Feb 27
Weekly RTTY Test	0145Z-0215Z, Feb 27
QRP Fox Hunt	0200Z-0330Z, Feb 27
NCCC Sprint	0230Z-0300Z, Feb 27
K1USN Slow Speed Test	2000Z-2100Z, Feb 27
CQ 160-Meter Contest, SSB	2200Z, Feb 27 to 2200Z, Mar 1
UBA DX Contest, CW	1300Z, Feb 28 to 1300Z, Mar 1
South Carolina QSO Party	1500Z, Feb 28 to 0159Z, Mar 1
North American QSO Party, RTTY	1800Z, Feb 28 to 0559Z, Mar 1
NA Collegiate Championship, RTTY	1800Z, Feb 28 to 0559Z, Mar 1

The W2MMD Repeaters

2 Meter Repeater
Output : 147.180 MHz
Input : 147.780 MHz
Offset : +600 kHz - PL : 131.8 Hz
(Conventional FM plus C4FM Capability)
EchoLink : W2MMD-R

70 cm Repeater
Output : 442.100 MHz
Input : 447.100 MHz
Offset : +5 MHz - PL : 131.8 Hz
(Conventional FM plus C4FM Capability)

The above repeaters are both
located in Pitman, NJ
GPS : 39.728481°, -75.131088°

1.25 Meter Repeater
Output : 224.660 MHz
Input : 223.060 MHz
Offset : -1.6 MHz - PL : 131.8 Hz
Location : Sewell, NJ
GPS : 39.746738°, -75.077094°

SKYWARN™ Net
Sunday @ 1930 : 147.180 MHz Repeater

Gloucester County ARES Net
Sunday @ 2000 : 147.180 MHz Repeater

GCARC TechNet ZOOM Forum
Available Every Monday @ 1930 Hours
Join ZOOM Meeting Link :
https://bit.ly/3K8bWwj

Tuesday AfterNoon 2M Net @ 1200 Hours

Monday & Thursday Night 40M Net
1900 Hours
7.170 MHz (Plus or Minus 5 or 10 kHz)

Thursday 2M Net @ 2000 Hours

All 2 Meter Nets Are Also On EchoLink :
W2MMD-R

Meeting Calendar

General Membership Meeting
Wednesday, February 04, 2026
1900 Hours
Pfeiffer Community Center
Simulcast Live on ZOOM
Meeting ID : 982 4039 1944
Passcode : 091084
Join ZOOM Meeting Link :
https://bit.ly/4s67geS

Board of Directors Meeting
Wednesday, February 18, 2026
1900 Hours
W2MMD Clubhouse

"Ask not what your Club can do for you, Ask what you can do for your Club"
- KA2OSV

"There's More To Ham Radio Than You Can Possibly Do!"
- K3TS

*** Badges ***

Need a new or replacement badge
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Chris Prioli AD2CS
chris@ad2cs.com

Question Pool Answers : E5A01:A; E5A02:C; E5A03:D; E5A04:A; E5A05:A; E5A06:B; E5A07:A; E5A08:C; E5A09:C; E5A10:A; E5A11:C; E5A12:C; E5A13:C